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PAPER TRADE JOURNAL

With Which Is Combined

Vol. XCIV, No. 6 — PAPER — Thursday February 11, 1932

Chicago Paper Market Exhibits Firmer Trend

Strengthening of Situation Most Noticeable In Kraft Wrapping Paper Division, Where Recently Reported Improvement Continues—Trading In Sulphite Specialties Brisker Than of Late—With Inventories Below Normal and Outlets for Paper Plentiful Outlook For Future is Becoming Brighter

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., February 6, 1932.—A continued slight strengthening of the general market is noted in Chicago paper circles this week. This strengthening is more noticeable in the kraft field, where the improvement of a week ago is continuing. Some sulphite specialties also showed a tendency to improve during the week just passed, an improvement credited not so much to an actual increase in price but to a tendency on the part of buyers to believe that such an increase is not far away. As a result, buyers who have been holding off are now going into the market. "It is possible," says one source of information "that prospective buyers in other lines will shortly begin to feel that the bottom has been reached and will go into the market. When this happens the buyers strike is likely to be over for a time at least. No one denies that inventories are low. And no one denies the fact that there are still plenty of outlets for paper. When buyers feel that they have to get on the price band wagon they will."

Writings were reported as fair in the Chicago market this week. Ground woods are dull and practically unchanged over last week, the same thing being true of news print. Book and covers are in only fair demand while the board market is still in the doldrums, according to reports. The only activity reported in the waste market has been in those lines affected by the market strengthening of the past week.

Lighter Paper for Air Mail

Chicago paper houses have shown considerable interest over the recent communications of aviation companies designed to bolster up the use of air mail by business in general. One aviation company reports that its research department has conducted an extensive investigation in order to secure a light weight paper and envelopes expressly for air mail. "Thanks to the enthusiastic and active cooperation of over one hundred of the leading business institutions and the advice of one of the foremost paper experts in this country," says the company, "an authentic and practical paper and envelopes are now suggested for air mail purposes."

The company has sent out the sheet itself and enclosed samples which have their full endorsement because "five sheets in a size No. 9 air mail envelope or six sheets in the attached small envelope will weigh less than ½ ounce. The saving is obvious as it means that your cost of air mail to Latin America is practically reduced 1/5th." The distributors of the paper are the Milton Paper Company, which seems to have done a splendid piece of work in getting the full cooperation of this aviation concern. "But," says a Chicago paper buyer, "this is the first time that I have even had the matter of lighter paper for air mail called to my attention and air mail is an old, old story by now. I believe that the paper industry has a really splendid opportunity to find new outlets by boosting the air mail game—or any other business that encourages the use of paper."

News of the Trade

Approximately sixty paper salesmen, manufacturers, representatives and jobbers will be on the regular Century at 12:40 p. m. on February 14 bound for the meetings of the American Paper and Pulp and National Paper Trade Associations in New York City. This information is given out of Jim Coy, of the Flambeau Paper Company, who is chairman of a committee to drum up interest in the forthcoming event and particularly in the transportation facilities. Mr. Coy reports that Chicago paper men are, in addition to wanting to attend the general functions, most anxious to hear Dr. George Craig Stewart talk at the Salesmen's Association luncheon on February 16.

A paper executive will guide the destinies of the Printing Supplymen's Guild of Chicago throughout the coming year. C. G. Foster, of the J. W. Butler Paper Company, Chicago, has been elected president of that group to succeed R. K. Hoover of Charles N. Stevens Company.

From the Chicago Association of Commerce comes the information that included among the new subscribers to the Advertising Council of that organization is one paper representative, Frank Bonell, of the Paper Mills Company. A number of printing representatives were also on the list.

Chicago members of the Waste Paper Institute are adding their voice to the request that the Trade Practice Conference scheduled for that organization be held in New York City on March 14 in order that those traveling any distance will have the opportunity of not only attending the Conference but also of being at the National Association of Waste Material Dealers meeting which, with all divisions represented, will convene in New York City, March 14 to 16.

Fine Paper Mills Fairly Active in Ontario

With Orders Coming In Freely Plants Are Operating On Average of 75 Per Cent of Capacity —Under Persistent Demand for Light Weight Papers, Tissue Manufacturers Are Maintaining Production At Approximately 90 Per Cent of Capacity

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., February 8, 1932.—Although individual orders continue to be small in both wholesale and mill circles in Ontario, most of the paper merchants and manufacturers report evidences of a renewal of business now that stocks have reached a point when replenishment is necessary. One of the largest fine paper manufacturers states that orders are coming in freely and that they are well distributed in various parts of the Dominion. Most districts in Canada are making fair requisitions for fine papers and there has also been some improvement in the coarse paper market, although this has been less pronounced. There is a fair degree of activity in all of the paper mills and manufacturers are confident that the Spring is going to produce some really good business. There is quite a fair demand for coated stock and manufacturers of bristols, blotting, manilas, tags and similar Made-in-Canada lines are selling well by both manufacturers and wholesalers.

Mills making book and litho papers are active, while orders for writings and bonds generally are coming along well. Fine paper mills may be said to be operating on an average of 75 per cent. Under quite a good call for light weight papers the tissue mills are operating at around 90 per cent capacity and find their business increasing satisfactorily under intensive selling efforts and the promotion of new ideas for decorative crepe lines. Although business is still rather quiet in paper box circles the board mills are finding an outlet for their products and are fairly busy operating on a five day basis for the most part. Envelope plants are only moderately busy and there is still a light call for manufactured stationery lines.

Increased Tonnage but Less Income

At the annual meeting of the shareholders in Toronto of Hinde & Dauch Paper Company, of Canada, Sidney Froham, president, stated that the lesson of "trying times" had been heeded by the management "who had bent their energies to the task of protecting your ultimate interest in these properties and their markets. Maintenance of the company's credit, the physical condition of its facilities and its well-earned position in our industry have not been permitted to suffer, either by distribution of unearned profits or by the number and remuneration of our personnel. New refinements of manufacturing methods have minimized the man-hours required for efficient operation, and, while the maintenance of our working organization is scarcely less important than the preservation of our properties, every effort has been made to effect this economy. In our particular industry the unfavorable business situation has been unduly complicated by intense competition, with prices depressed on box making material even below the cost of manufacture, attributable largely because of added productive capacity far in excess of demand." Mr. Froham also stated that the tonnage of the company's products sold during 1931 was substantially in excess of the previous year, although in money value the revenue from sales was somewhat less. "Although the stress of times has squeezed present profit from production and plunged industry into a desperate competitive struggle for bare existence," he said, "we may rest assured that they who emerge with improved facilities, perfected products, thorough organization and appreciative markets, being thus prepared for prosperity, will receive their rewards." The board of directors comprises: Sidney Froham, president; Ralph King, vice-president; L. F. Winchell, general manager; J. H. McLeod, secretary; T. E. Lloyd, treasurer; M. H. Murch and R. L. Warren.

Toronto Firm Builds in Vancouver

It was learned at the head office in Toronto that Barber-Ellis Company, Ltd., paper dealers and manufacturing stationers, had taken over possession of their new building at 950 Homer street, Vancouver. In the Summer of 1912 the firm decided that owing to a rapid increase of its business in British Columbia it would open a new branch in the provincial capital. On October 4 of that year the present manager, Lorne D. Graham, opened up the new branch in rented premises. Development of the business was rapid and last year C. G. Ellis, managing director of the company, visited the branch, and it was then decided to purchase property and erect a new building which has now been completed. It is one of the finest structures of the kind on the coast and has been built for the manufacture of envelopes and stationery and for warehousing paper. The firm of Barber-Ellis Company, was established in 1876, with its head office in the Ellis Building on Adelaide street, Toronto, and the main factory at Brantford, Ont. Today the company has branches in Montreal, Toronto, Brantford, Winnipeg, Regina, Edmonton, Calgary, Vancouver and Victoria, and in conjunction are three factories, one in Vancouver, the main one in Brantford, and another in Winnipeg.

Notes and Jottings of the Trade

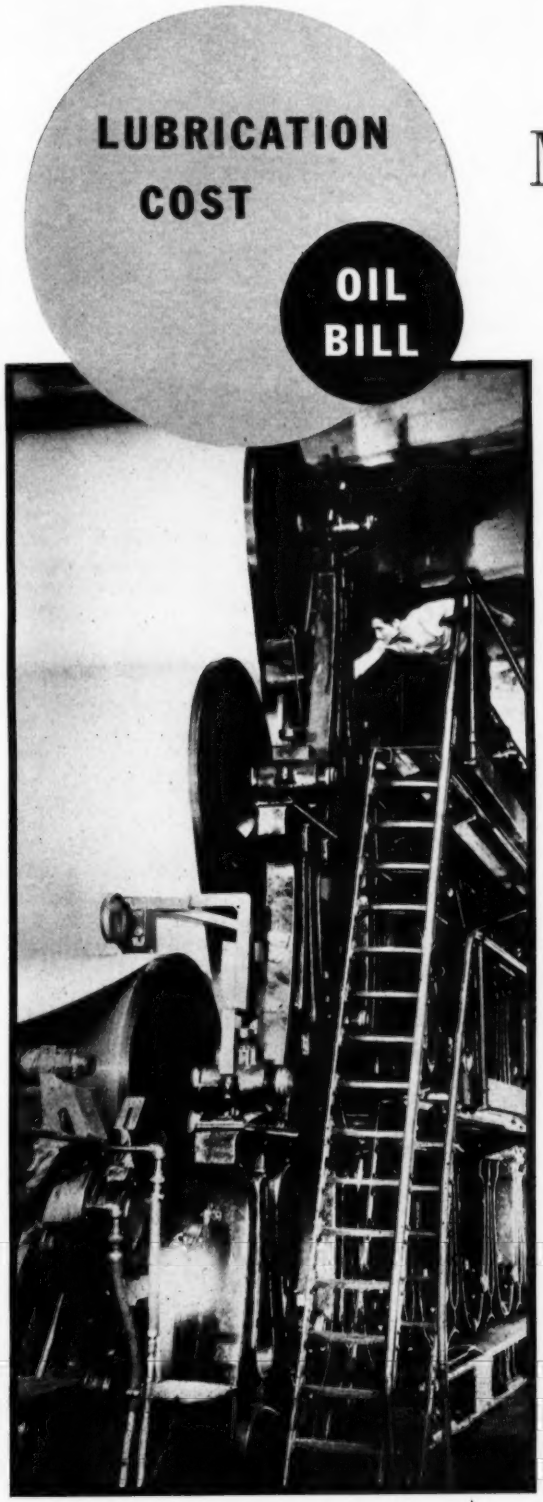
C. Ernest French, of the Toronto sales office of the Howard Smith Paper Mills, is spending a few days in Chicago.

Dryden Paper Company, with mills at Dryden, Ont., and the Brompton Pulp and Paper Company, have appointed Paul Sabel & Co., as sole representatives in England for kraft paper. Brompton's is the oldest paper concern in Canada and they produce a high grade of M. G. and unglazed kraft. They also produce M. G. sulphites, folding box boards and news print, of which quantities will be available for the British market.

F. L. Mitchell, of the Abitibi Power and Paper Company, has returned to Toronto after visiting the company's mill at Fort William, Ont.

Polar Iced Bristol is the name of new bristol board just put out by the Don Valley Paper Company, Ltd., Toronto, with Brown Bros., Ltd., Simcoe street, Toronto, as the sole distributors in Ontario. It is being advertised for a variety of uses where something different is required.

Canada Sand Papers, Ltd., Preston, Ont., have obtained a charter to manufacture all types of abrasive papers and cloths coated from such materials as flint, garnet, emery, etc. E. F. Stark, formerly of Abrasives Ltd., Brantford, Ont., is the manager of the new company.



A PAPER MANUFACTURER

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Read this actual record of a Louisiana paper manufacturer who learned that his real *lubrication cost* had been running many times the amount of his *oil bill.*

The production superintendent of this mill had been using oils, costing $1370 annually, which he thought were giving good service. Finally he decided to try Gargoyle Lubricants. After six months, he was amazed at these results, for which he gave correct lubrication a big part of the credit:

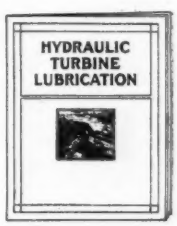
Saving in power	$3,374.00
Reduced Fourdrinier wire cost	571.00
Reduced oil cost	405.00
Reduced maintenance cost	6,420.00
TOTAL SAVINGS	$10,770.00

In our files gathered from every industry in all parts of the world, there are hundreds of other cases in which unnecessary costs caused by incorrect lubrication went on until *correct* lubrication brought them to light.

There's a big future waiting for production men who can cut today's costs. Let a Vacuum engineer discuss with you how Gargoyle Lubricants and Vacuum engineering service have cut costs in plants similar to yours.

Pulp and Paper Mill Lubrication, Stationary Steam Engines, Steam Turbine Lubrication, Hydraulic Turbine Lubrication, Gear Lubrication.

Many paper mills have found these books particularly helpful in the lubrication of their equipment. We will be glad to send them to any executive or engineer, if requested on your company letterhead.



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Lubricating Oils

VACUUM OIL COMPANY, INC.

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Activities of Fox River Valley Paper Mills

Decision of Wisconsin Public Service Commission Exempts Pulpwood from Inter-State Freight Rate Increases Granted Railroads—Nekoosa-Edwards Paper Co. Purchases 1,480 Acres In Adams County to Add to Its Company Forests

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., February 8, 1932.—Paper and pulp mills were decidedly benefited by a decision of the Wisconsin Public Service Commission issued last week when pulpwood and dock coal were exempted from inter-state rate increases granted railroads operating in Wisconsin to conform to the new schedules authorized by the Interstate Commerce Commission.

All rates were increased except those on pulpwood, excelsior wood and bolts, chemical wood and dock coal. The Wisconsin State Grange, an organization of farmers, helped paper mills gain this concession. They submitted figures to show that 50 to 75 per cent of the pulpwood used in the state is produced by farmers, and their economic status would not stand any added freight rate burden. Mills and coal dock owners pleaded that the increase applied to dock coal would mean a doubling of the emergency rates because an increase already has been applied to the commodity on its rail movement from Lake ports. Switching charges are increased ten per cent.

Nekoosa-Edwards Reforestation Plans

Cutover lands totalling 1,480 acres in Adams County have been purchased by the Nekoosa-Edwards Paper Company, Nekoosa, Wis., to be added to its company forests. The tracts are adjacent to 500 acres already acquired by the company and border on lands in Wood County, where forests already have been planted. It is the company's plan to plant these new lands with Norway, jack and white pine for the two kraft mills, according to F. G. Kilp, chief forester of the company. By the end of this year, approximately 10,000 acres will have been planted. About 800 additional acres will be planted in Wood county and 1,000 acres in Ashland county. The nurseries inventory about 6,300,000 trees, including one and two year transplants. All of the lands are being entered under the state forest crop law, which exempts them from all yearly taxation except ten cents an acre until the wood is cut. The company will eventually have enough wood to supply its mills permanently by rotation of cutting and planting.

News of the Industry

The Allen Waste Paper Company, Menasha, Wis., has been purchased by a new corporation known as the Menasha Mill Supply Company. Its output is to be increased materially and more workers added to assort and ship waste paper to mills of the Fox River Valley. The new concern is connected with the United States Paper Supply Company, Chicago, the Kansas City Waste Paper Company, Kansas City, Mo., and the Des Moines Waste Paper Company, Des Moines, Iowa. Fred Rosenthal, who was manager of the Allen company, will continue as manager of the new concern.

With the addition of 29 new watch towers equipped with range finders, the forest areas of Wisconsin will be covered by 103 fire towers, giving much greater protection than ever before. The Wisconsin Conservation Commission has condensed the patrol districts from eleven to four so as to afford better supervision and control. About $200,000 will be spent for fire lanes to be built during the coming season.

Approximately 6,000 are enrolled in the Foreman's Safety School conducted this Winter at Milwaukee, Wis. The attendance has been so large it was necessary to use the Milwaukee Auditorium for meetings. Sectional meetings have been held, in which the paper mill, converting and manufacturing industries are participating. The paper section was addressed at its last meeting by M. G. Hoyman, safety director of the Kimberly-Clark Corporation, Neenah, Wis. Mr. Hoyman explained the safety program conducted successfully for years by his company.

George W. Mead, president of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., has decided to retire from service as Mayor of his home city. He has held the office for six consecutive years as the popular choice of his employees and the public. He has made announcement from his winter home at Miami, Florida, that he will not seek a fourth term.

Mrs. W. L. Davis, of Eau Claire, Wis., wife of the president of the Dells Pulp and Paper Company, died last week after an illness with pneumonia. Mr. and Mrs. Davis celebrated their golden wedding anniversary on December 14. Burial took place at the former family home at Neenah, Wis.

Two paper mill workers were found dead at their respective plants last week. Arthur Gemuenden, watchman at the Bates Valve Bag Company, Marinette, Wis., dropped dead while making his rounds of the plant, which has been idle. Bruce A. Dixon, an employee of the Mosinee Paper Mills Company, Mosinee, Wis., dropped dead from a heart attack while changing clothes in the mill locker room preparatory to starting his work.

The approaching marriage is announced of Ray Dowling, Texas representative of the Northern Paper Mills, Green Bay, Wis., and Miss Elinore Freeman Lancaster, of Dallas, Texas.

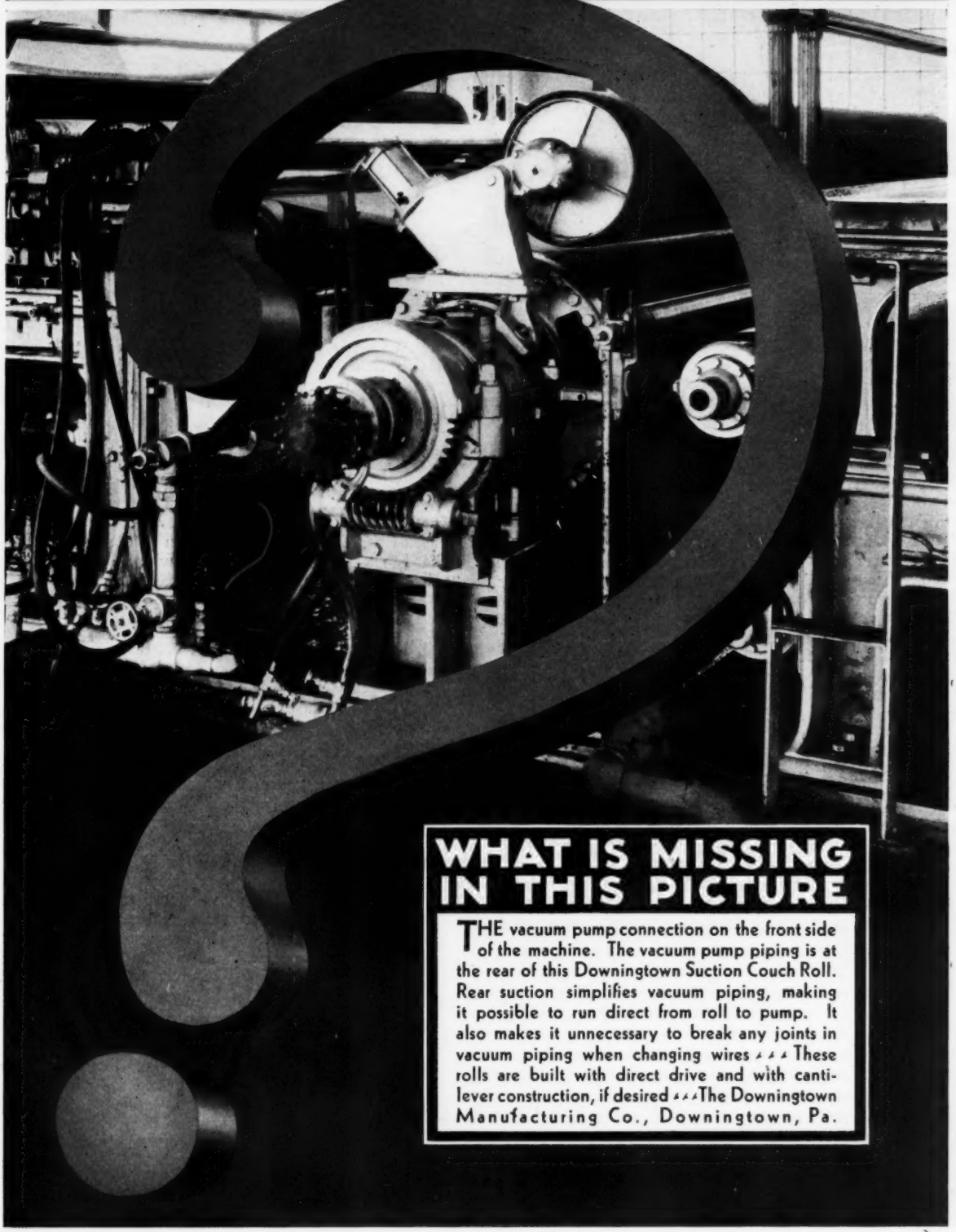
New National Tube Booklet Out

Stainless and Heat Resisting Pipe and Tubes, manufactured by the National Tube Company, of Pittsburgh, Pa., subsidiary of the United States Steel Corporation, which represent an outstanding contribution to the general advancement of tubular products to meet the requirements of modern processes and materials used in the manufacturing, chemical, oil refining and other industries, are thoroughly described and illustrated in a new forty page booklet.

For the specific uses intended they assume the highly important role of effecting more economical production by lengthening the life of apparatus, thus minimizing delays or shutdowns for replacements of tubular parts, and by permitting higher operating temperatures now so desirable in so many manufacturing processes.

This booklet is available to anyone interested in the subject treated. Requests may be made to any District Sales Office, or to the National Tube Company, 1802 Frick Building, Pittsburgh, Pa.

DOWNINGTOWN



WHAT IS MISSING IN THIS PICTURE

THE vacuum pump connection on the front side of the machine. The vacuum pump piping is at the rear of this Downingtown Suction Couch Roll. Rear suction simplifies vacuum piping, making it possible to run direct from roll to pump. It also makes it unnecessary to break any joints in vacuum piping when changing wires ▲▲▲ These rolls are built with direct drive and with cantilever construction, if desired ▲▲▲ The Downingtown Manufacturing Co., Downingtown, Pa.

Boston Paper Market Becomes More Buoyant

Good Sized Orders Around for Various Standard Grades of Paper — Fine Paper Manufacturers Report Improved Conditions—Bonds and Ledgers In Persistent Request—Coarse Paper Division Continues Active, With Prices Holding Firm

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., February 8, 1932.—A fair amount of business has been transacted in the wholesale paper market here the last fortnight. Many of the trade regard the outlook encouraging as a whole, particularly in view of conditions which have prevailed generally. Some good-sized orders have been and are coming through in several lines. There has been a fair demand for bonds and ledgers. Sampling and inquiries continue from printers, several of whom are placing satisfactory orders in connection with direct mail business. Indications favor an improvement for this month. Some prominent manufacturers of fine paper report a good January. The wrapping paper market has improved somewhat. Prices are holding firm, compared with conditions which obtained recently. Box papers and fancy papers are in moderately good demand.

The box board market shows a little better outlook. There has been a considerable call during the last two weeks for material for shoe boxes, owing to an increased volume of footwear demand, especially in women's lines. Shoe production is being stepped up all over the country, although much of the board desired for shoe cartons recently has been of a low-priced grade. Board specialties are in better demand.

Paper stock in general is in an unsatisfactory condition, as for a considerable period, although dealers are hopeful. Many grades are inactive or nearly so. Sellers of stock who are pressed to meet obligations are willing, under the circumstances, to liquidate at concessions. For this reason, it is difficult for the market to be stabilized. The general trend is downward, although an exception is noted in the last week in domestic roofing rags, on account of an increased demand. The No. 1 grade has advanced from a range of .48 @ .53 to .53 @. 58; No. 2 from .43 @ .48 to .48 @ .53, and No. 3 from .38 @ .43 to .43 @ .48.

Andrews Paper Co. Adds New Lines

The American Writing Paper Company has appointed the Andrews Paper Company and the Storrs & Bement Company distributors of Riverdale Cover and Riverdale Leathertone Cover. The Andrews Paper Company has been appointed distributor of Daily Sales Index, made by the Chemical Paper Manufacturing Company. The company is now carrying a complete stock of the products of the Howard and Maxwell companies. The same company has become a distributor for all the products of the Riegel Paper Corporation and is sending out folders of the Riegel Jute Tag and the Riegel Glen Tag. The Andrews Paper Company is to mail to the trade within the next fortnight a folder of its own Sandow Bond, a new modern sulphite bond, unwater-marked, in white and colors. It has a large warehouse stock of this line, as well as a warehouse stock of Tundra Mimeograph, wove and laid, another of its own lines. Albert E. Hahn has become associated with the Andrews Paper Company and is to specialize on fine papers. Mr. Hahn was in the fine paper department of Carter Rice & Co. Corp., for 26 years and for the last two years was with Stimpson & Co. George Whalon has also become associated with the Andrews Paper Company and will specialize on fine papers.

News of the Trade

The sales organization of Stimpson & Co. were recently guests of Henry L. Sampson, Eastern manager for the Hoberg Paper and Fibre Company, of Green Bay, Wis., manufacturers of the Evergreen line of paper towels, napkins and toilet tissues. Mr. Sampson showed a four-reel motion picture of the manufacture of their products from the evergreen tree to the completed product and gave the guests an extremely interesting and instructive talk. Refreshments were served.

The Boston Paper Trade Association expects to hold its annual meeting at the Algonquin Club, Wednesday, March 16, when the election of officers for the ensuing year will take place. The Rev. James Gordon Gilkey, D.D., will be the speaker of the evening. He will discuss present day conditions.

"Trade Journals—They Stimulate," is the subject of an article in the February issue of "How," published by the Tileston & Hollingsworth Company, which strongly emphasizes the importance of such publications. The article closes with the following: "Keep reading your trade journals. They help keep you modern. They keep you abreast of the times. They keep you in the race."

The Erving Paper Company, Erving, Mass., contemplates erecting an addition to the paper mill.

Metso Sodium Metasilicate

Philadelphia Quartz Company, manufacturers of silicate of soda in its various forms, of Philadelphia, Pa., has just issued an interesting and instructive booklet describing Metso Sodium Metasilicate. One section of this booklet applies particularly to the paper industry.

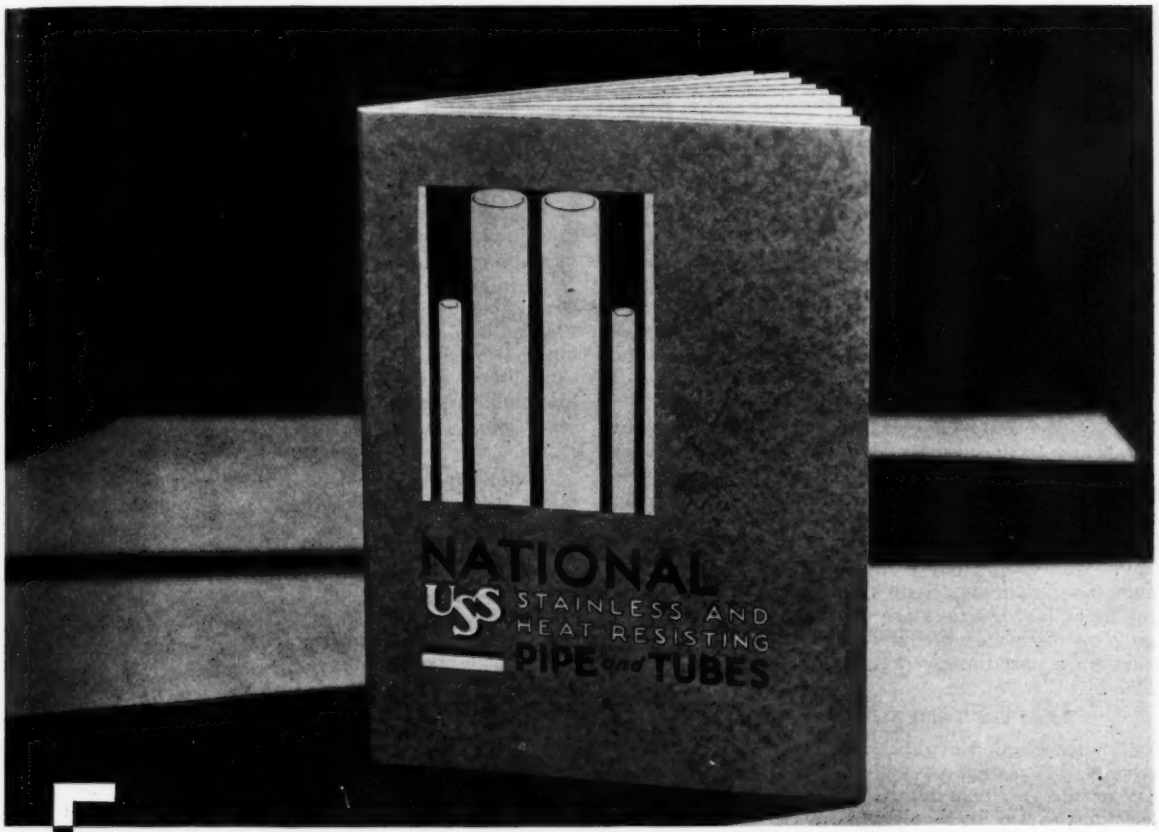
Manufacturers of fine high grade writings, ledgers, etc., are confronted with the problem of using clean rags. This new alkali is a safe detergent which thoroughly frees fabrics from dirt and grease. Metso does not reduce the tensile strength of the fabrics, thereby assuring a strong, well-formed sheet.

Woolen felts in the paper mill need to be thoroughly cleansed, but care also must be exercised in the selection of the detergent. Metso has given excellent results in the mills where it has been introduced. Metso as an alkali also has potential interest as a solvent for casein.

In various other processes, such as deinking, bleaching, and equipment cleaning where an active alkali is essential, Metso has been tried successfully.

Wadhams & Co. Add Fine Paper Line

PORTLAND, Ore., January 29, 1932.—Wadhams & Co., a concern which for many years has served the independent grocery trade as wholesalers, has now added to its paper department a line of fine papers for the printers' trade. The company has handled coarse paper, bags and the heavier variety for some time. C. H. Shephard is the new manager of the paper department. The company is located at East Second and Morrison streets.



For those who want to know *about* USS STAINLESS *and* Heat Resisting Pipe and Tubes

Here's an interesting 40-page book prepared to answer some of those questions you have been asking about Chromium and Chrome-Nickel Alloy Steel tubular products, particularly about the 18-8 grade. It will tell you just what this material is, how it is made and what it will do for you. Information of unusual interest will be found in these pages, both in the reading matter and illustrations of some of the various possibilities of Stainless Alloy Pipe and Tubes.

Read in detail about the widely talked of U S S 18-8 Chrome-Nickel Alloy—the added economies, durable service and appearance value derived from its use. All in all, you will find this book to contain just the information you have been looking for. Write for it now, there is no obligation—it's yours for the asking.

[U S S Chromium-Nickel Alloy Steels are produced under the licenses of the Chemical Foundation, Inc., New York; and Fried. Krupp A. G. of Germany.]

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Columbia Steel Company
Cyclone Fence Company
Federal Shipbuilding and Dry Dock Company
Illinois Steel Company
Minnesota Steel Company
National Tube Company
Oil Well Supply Company
The Lorain Steel Company
Tennessee Coal, Iron & R. R. Company
Universal Atlas Cement Company

Pacific Coast Distributors—Columbia Steel Company, Russ Building, San Francisco, Calif. *Export Distributors*—United States Steel Products Company, 30 Church Street, New York, N. Y.

Demand for Paper Improves in Philadelphia

Small Lot Sales of Standard Grades of Fine Paper Expand Slightly—Wrapping Paper Going Forward In Fairly Satisfactory Volume—Some Improvement Noticed In Request for Specialties—Mills Gradually Increasing Production

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., February 8, 1932.—Betterment was apparent among the Philadelphia paper dealers as the trade broadened its sales of small lot purchases of standard grades. The fine paper trade, particularly, was affected by the growing business. While there is no great improvement, there is a steady advance in business which is encouraging to the merchants and a steadier price trend was noticeable. With the exception of cuts in twines and tissues prices were steady. There was a 5 per cent cut on sulphite tissues and kraft tissues, which seems out of line in view of the advance made in krafts. Wrapping papers are steady but moving slowly. Specialties are more active and like fine papers move in broader small lot trading. Converters find a slight improvement in board products and containers, with the bag situation more encouraging as higher prices are maintained. Mills are expanding operations as orders improve, but still continue to maintain a part time week instead of the full working schedule.

Paper and Twine Merchants to Elect

The annual election of officers of the Paper and Twine Merchants Association of Philadelphia will be held on Friday at the Adelphia Hotel. These have been named for election: president, Stanleigh Brower, J. L. N. Smythe Company; vice president, Harold Newell, American Manufacturing Company; secretary, Charles Ryan, C. Moore & Co., and treasurer, D. Crimmins, Edwin H. Fitler Company. There will be a dinner and review of the year's activities by the retiring president, William Edkins, of the Keystone Cordage Company.

Paper Trade Association to Meet

The first meeting of the Philadelphia Paper Trade Association, to be held under the newly elected officers, who were installed at the January session, will take place on Wednesday at the DuFour Restaurant in South 4th street. The new president is William A. Hentz, of the D. L. Ward Company, who will preside at the meeting of the Fine Paper Division.

Hammermill Meeting in Lehigh Valley

Under the combined auspices of the Hammermill Paper Company, of Erie, Pa., and distributors of the Hammermill papers in the Lehigh Valley, the Lehigh Valley Paper House Division of S. Walter Inc., there was held a luncheon gathering of the printers of the section, including the Valley from Easton, Pa., north. The meeting of the Lehigh Valley printers was staged at the Hotel Americus, with more than seventy guests attending and hearing the talk of Representative Borthwell, of the Hammermill executive forces, whose topic was cover papers represented in the Hammermill Line. George E. Barnes, manager of the Lehigh Valley Paper House Division of S. Walter Inc., presided, while President Simon Walter gave a brief word on the cover papers and then turned the meeting over to Mr. Borthwell. Mr. Walter delivered a short address on what printers could do towards dispelling present conditions by promoting a broader demand for printed products and all without spending their own dollars but by simple perseverance in sales efforts on their part by attracting attention of the consumer to the possibilities of manufacturers, distributors and retailers generally, through attractive advertising of the printed message. Mr. Borthwell delivered an interesting and constructive talk, illustrating it with interesting subjects on what can be accomplished with Hammermill cover, the audience following closely in attention and demonstrating an enthusiastic impression.

Paper Service Co. Changes

Following the removal of the Paper Service Company from its former location at 28 North 6th street, to its new quarters in the Datz building at 18 South Marshall street, it is announced that the organization, while remaining intact, is now affiliated with the fine paper and box makers paper supply house of A. S. Datz & Son, Inc., owners of the building. The firm is now linked with the Datz concern as a subsidiary. The officers of the Paper Service Company have been increased by members from the Datz company and are now: president, W. A. Welsh; vice president, Louis Schulman; secretary, J. M. Welsh; and treasurer, Howard Marcus. Howard Marcus and Louis Schulman are also officials of the Datz company and of the Louis Schulman Paper Company, of New York. The organizations will operate as separate units though controlled by the same interests. The members of the Paper Service Company, at present and in its original organization are W. A. Welsh and J. M. Welsh, who founded the company about a decade ago.

Cleveland Container Co. Increases Production

Following the equipment of the units in the Philadelphia plant of the Cleveland Container Company, at Water and Jackson streets, there has been inaugurated this year a broader scale of production. The four plants of the company, in Cleveland, New York, Detroit and Philadelphia, are running on full time, as reported by A. G. Grinnell, who has been at the local plant after a swing of the various branches. The Cleveland company produces a full line of paper cans and tubes.

West Disinfecting Co. Adds Paper Towels

The Buck Run, Pa. mills of the General Paper Company, is now devoted to production of a full line of kraft and white crepe paper towels, which are distributed through the owners of the mills, the West Disinfecting Company, with plant at 49th street and Greys Ferry Road. George Bicking is head of the paper towel division, which is now distributing double the former quantity of towels.

Bids on News Print Requested

WASHINGTON, D. C., February 8, 1932—Announcement was made today that the Public Printer will open bids on Monday, February 15 for 3,000,000 pounds of news print paper for the annual supply of the Government Printing Office for the year beginning March 1, 1932. Bids were requested on this lot of paper when the annual bids were opened January 25, but all bids submitted on this item were rejected, when the awards were made February 1, making necessary the calling for bids again.

The ROSS-WAGNER FURNACE

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In the soda process it eliminates the use of rotaries, ash conveying apparatus and leachers.

In the sulphate process it eliminates the need for disc evaporators, rotaries and smelters.

In either process greater efficiency in recovery of chemicals with complete combustion of volatiles and fixed carbons.

Savings in fuel cost and permanent protection against troublesome dirt, smoke and odors.

— a good investment!

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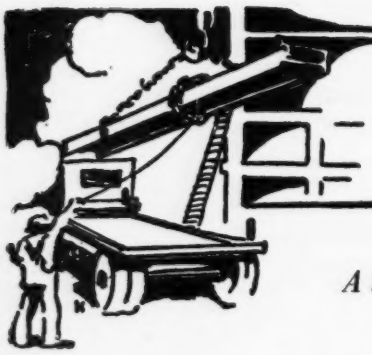

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Brooklyn, N. Y.—The Scandore Paper Box Company, 169 Franklin avenue, manufacturer of paper boxes and containers, has concluded negotiations for the purchase of the factory of the Westinghouse Lamp Company, 31-43 Steuben street, consisting of a seven-story brick structure, on site 100 x 160 feet. It was secured for a consideration of $350,000. Purchasing company plans to occupy at an early date, and will remove present plant to new location, where considerable increase in capacity will be arranged.

Omaha, Neb.—The Omaha Paper Stock Company, Marcy and 18th streets, is planning rebuilding of portion of storage and distributing plant, recently damaged by fire, with loss reported at $25,000, including stock and equipment.

Richmond, Va.—The Western Tablet & Stationery Corporation, 700 Everett Street, manufacturer of commercial paper goods, with headquarters at Dayton, Ohio, has approved plans for a new addition to local factory branch, storage and distributing plant, consisting of a one-story unit, 120 x 130 feet, reported to cost about $30,000, with equipment. Work will be placed under way at once. It is understood that general building contract has been awarded to the Allen J. Saville Company, Electric Building, Richmond. An award for a sprinkler system has been made to the Grinnell Company, Charlotte, N. C., and Providence, R. I.

New York, N. Y.—The Golden Cone and Cup Corporation, recently organized by Henry Kaltun, 1181 Walton avenue, Bronx, and associates, plans operation of plant for the manufacture of paper cups, cones and kindred products. Benjamin Harris, 194 Rodney street, Brooklyn, N. Y., is interested in the new company.

Kingsport, Tenn.—The Kopak Corporation, recently organized under Delaware laws with capital of 5000 shares of stock, no par value, is said to be a new interest of the Eastman Kodak Company, Kodak Park, Rochester, N. Y., to be identified with its new division for the manufacture of transparent wrapping materials, for which a large local mill recently was placed in service. The new product will be marketed under the name of "Kodapak." The mill is now being operated under the direction of the Tennessee-Eastman Corporation, a subsidiary organization.

Kaukauna, Wis.—The Thilmany Pulp and Paper Company, Kaukauna, has completed the construction of two new one-story additions to its mill, 80 x 216 feet, and 43 x 280 feet, respectively, and expects to place in service at an early date.

East Newark, Del.—The Continental-Diamond Fibre Company, East Newark, is running on a curtailed schedule in different departments, and will likely hold to present basis for a number of weeks to come.

Chicago, Ill.—The Package Box Company, 7 South Dearborn street, recently organized, is said to be planning operation of local plant for the manufacture of paper boxes and containers. The new company is headed by James F. Burns and John A. Burke. It is represented by Joseph D. Daly, Title & Trust Building, Chicago.

East LaPort, N. C.—The Blackwood Lumber Company, East LaPort, is said to have concluded negotiations with the Champion Fibre Company, Canton, N. C., for supply of pulp wood, ranging from 750 to 1000 cords of material monthly. Plans are under way for the construction of a mill in Canada Township at the northern end of Jackson County, N. C., where the Blackwood company owns a large tract of balsam and spruce wood lands. Company will also make extension in its railroad line, now running from LaPort to Cowarts and vicinity, building into new plant site. Entire project is reported to cost over $65,000. The pulp wood supply will be used by the Champion company in connection with plant expansion program now in progress, estimated to cost more than $1,000,000; the additions will be ready for service during the spring. A. M. Henson, Sylvia, N. C., will be in charge of operations for the Blackwood company at the new pulp wood mill.

Danvers, Mass.—The Friend Box Company, recently organized with a capital of $100,000, is said to be planning early operation of a local plant for the manufacture of paper boxes and containers. Lester D. Friend, Marblehead, Mass., is president and treasurer of the new company.

Orange, Tex.—The Commercial Pulp and Paper Company, recently organized to take over and operate the local mill of the Yellow Pine Paper Mill Company, is said to be arranging to take bids in March for proposed new equipment to be installed at the plant, including machinery for the production of waxed paper and other processed stocks. The expansion program, including remodeling of mill, is reported to cost close to $125,000. C. A. Keiren is company engineer and mill superintendent.

Buffalo, N. Y.—The Dahlke Stationery and Manufacturing Company, 39-41 Pearl street, is operating on an improved production schedule, due to increase in volume of orders, and expects to hold to present basis for a number of weeks to come. Benjamin A. Dahlke is president.

Dubuque, Iowa—The Maizewood Products Corporation, Railroad avenue, manufacturer of wallboard specialties, using cornstalks as raw material, has begun the rebuilding of its mill, recently destroyed by fire, previously referred to in these columns, and is awarding different miscellaneous contracts for competition. A contract for plumbing has been let to Mullen Brothers & Company, Dubuque; for structural steel to the Mississippi Valley Structural Steel Company, Chicago, Ill.; and for elevator unit, to the Montgomery Elevator Company, Moline, Ill. General contract was recently placed with W. L. Yokom,

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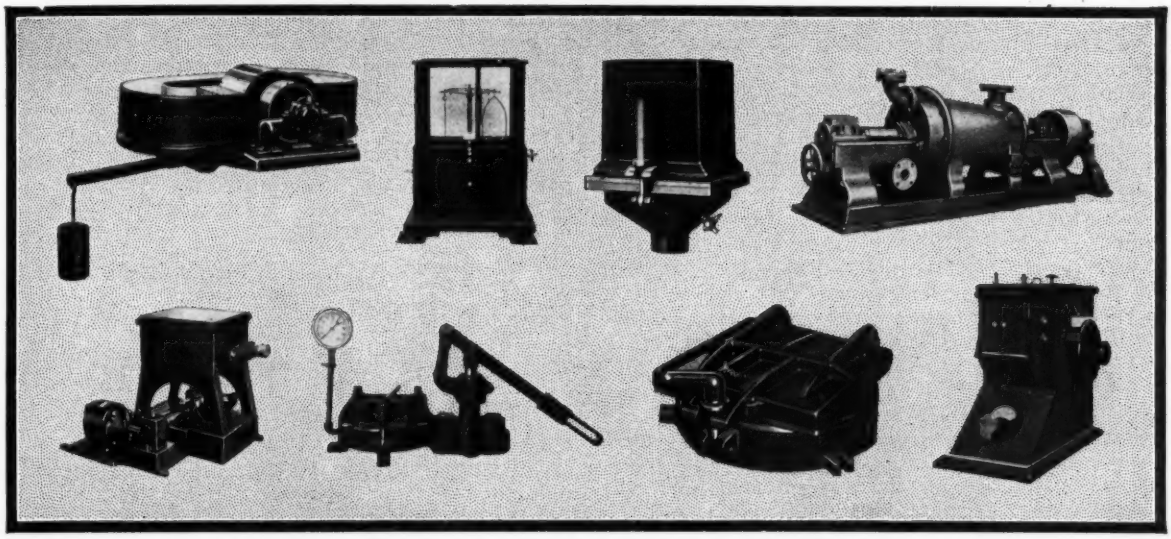

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Inc., Roshek Building, Dubuque. The structure will be four-story, with one-story section, 60 x 500 feet, over all, and is estimated to cost close to $125,000, including equipment. A list of machinery to be installed has been arranged. A. Byron Hunicke is plant engineer, in charge.

New Companies

Philadelphia, Pa.—Stuarts, Inc., has been incorporated with a capital of $10,000, to manufacture and deal in commercial paper goods, stationery, etc. Howard E. Petersen, 201 Lynn boulevard, Highland Park, Pa., is the principal incorporator.

Boston, Mass.—The National Stationery Company has been incorporated with a capital of $25,000, to manufacture and deal in paper goods, stationery products, etc. Joseph E. Brauman is president, and Morris Needle, 61 Glenway street, Dorchester, Mass., treasurer and representative.

New York, N. Y.—The Riviera Paper Box Company has been incorporated with a capital of 100 shares of stock, no par value, to manufacture paper boxes and containers. The company is represented by D. L. Sprung, 295 Madison avenue, New York, attorney.

New York, N. Y.—The Farrell Card and Paper Company has been incorporated with a capital of 100 shares of stock, no par value, to manufacture and deal in card and paper stocks. Charles Hollender, 36 West Forty-fourth street, attorney, is company representative.

New Noble & Wood Products

Announcement is made by the Noble & Wood Machine Company, Hoosick Falls, N. Y., of a new type precision stock consistency regulator which makes possible remarkably close control of stock consistency. The new regulator is a compact and remarkably precise unit which can be installed at any point where uniform consistency is required. Operating entirely without human attention or supervision, it is claimed to eliminate the trouble and inaccuracies associated with sampling and floating leverage types of stock control.

In operation the entire stock supply at the point of installation passes through a mixing chest, where positive agitation keeps waters and fibers thoroughly and uniformly mixed. In its flow through an unagitated chamber the stock actuates a sensitive finder which, through a precise compensating device, controls the make-up water valve. This valve, responding to the slightest changes in stock density, opens or closes as necessary to supply the required quantity of diluting water to the stock. The diluting water, which may be clear or white water, is introduced at a point before the mixing chest, so that complete mixing of the added water with the basic stock is assured.

Although extremely sensitive, the regulator is sturdily built and ample enough in capacity to meet all mill requirements. Power is derived from a small motor, at very low operating cost.

Other new products of the Noble & Wood Company are an improved pulper and the Thune Screw Press or Concentrator, for which the company has exclusive American manufacturing rights. The pulper is of the kneading type, and is suitable for conditions where space requirements do not permit installation of the Noble & Wood Pulping Engine, and for reduction of waste papers and broke in small batches where special mill conditions prevail. The Thune Screw Press or Concentrator is a stock dewatering device used for concentrating all kinds of cellulose stock to high densities.

New York Trade Jottings

George W. Houk, executive vice-president of the Hawley Pulp and Paper Company, Oregon City, Oregon, is a New York visitor.

* * *

Harry P. Gould, president and treasurer of the Gould Paper Company, of Lyons Falls, New York, spent some time in the city last week in the interest of his organization.

* * *

Professor Frank G. Miller, head of the Forestry Department of the University of Idaho, and his wife, spent several days in New York last week before sailing on Friday aboard the *President Roosevelt* for Germany on an extended European vacation.

* * *

L. C. Reynolds, comptroller of the American Writing Paper Company, is to speak on "Safety—An Essential to Efficient Production," at the Third Annual Greater New York Safety Conference, to be held at the Pennsylvania Hotel, New York, on February 24.

* * *

Summerfield Eney, Jr., of the New York office of the Champion Coated Paper Company, made an instructive and interesting address at the luncheon meeting of the Associated Printing Salesmen, Inc., held at the Printing Crafts Club, New York, on January 27.

* * *

E. M. Mills, president of the Rainier Pulp and Paper Company, the Washington Pulp and Paper Company, Grays Harbor Pulp and Paper Company, Olympic Forest Products Company and National Paper Products Company, is a prominent New York visitor from the Pacific Coast.

* * *

The regular weekly luncheon and meeting of the Eastern Division of the Salesmen's Association of the Paper Industry was held on Tuesday at George's Restaurant, New York, when prevailing business conditions and other vital matters pertaining to the industry were freely discussed.

* * *

Thurlow Gordon, attorney for the International Paper Company, New York, was a guest at a luncheon meeting of the American-Russian Chamber of Commerce, held at the Bankers' Club, New York, on January 28, when the problems of the trade relations between the Soviet Union and the United States were discussed.

* * *

After being eighteen years at 96 Prince street, New York, W. L. Jones, Inc., paper and twine merchants, are moving into their own building at 116 Prince street. Telephone numbers remain the same, viz: Canal 6-6527 and 6-6529. W. L. Jones, Inc., will have more space in their new quarters and extend a cordial invitation to their friends in the paper industry to inspect the building.

* * *

The Salesmen's Cooperative Association of the Paper and Allied Industries in the Metropolitan District, has elected officers for the forthcoming year, as follows: A. Duitz, president; J. M. Schweiger, first vice-president; Louis Forbes, second vice-president; Ben Kohn, treasurer; and Dave Reiner, secretary. The new board of governors consists of Victor Cohen, chairman; Jack Chernick, M. H. Gold, Sam Hoffman, Max Lovett, Morris Rosenberg, Clarence Stein and George F. Vogt.

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COMING EVENTS

American Paper and Pulp Association, fifty-fifth Convention and Meeting. Pennsylvania Hotel, February 15-18. Annual Meeting, Thursday, February 18. Annual Banquet, Grand Ball Room, Thursday, February 18.

National Paper Trade Association of the United States. Convention, Pennsylvania Hotel, February 15-17. Luncheon, Wednesday, February 17

Technical Association of the Pulp and Paper Industry. Convention, Pennsylvania Hotel, February 15-18. Luncheons, Wednesday, February 17 and Thursday, February 18.

Salesmen's Association of the Paper Industry. Annual Meeting, Pennsylvania Hotel, Tuesday, February 16. Luncheon, Tuesday, February 16.

New York Association of Dealers in Paper Mills' Supplies, Annual Banquet, Hotel Commodore, Wednesday, February 17.

PULP AND PAPER PRODUCTION IN THE CENSUS OF MANUFACTURES IN 1929

The Bureau of the Census of the United States Department of Commerce has just issued a report giving complete production statistics in detail for paper and allied products for the Census of Manufactures taken in 1929. According to this report the total value of paper products in 1929 was $967,186,026 as compared with $919,891,465 in 1927 when the previous census of manufactures was taken.

The total production of news print in 1929 was 1,409,169 tons valued at $80,706,899 as compared with 1,516,929 tons valued at $98,782,477 in 1927 and 1,563,318 tons valued at $106,083,161 in 1925.

The total production of book paper in 1929 was 1,497,912 tons valued at $168,271,655 as compared with 1,328,782 tons valued at $160,868,747 in 1927 and 1,343,310 tons valued at $177,291,847 in 1925.

The total production of writing paper in 1929 was 607,590 tons valued at $113,223,595 as compared with 508,808 tons valued at $105,148,140 in 1927 and 473,804 tons valued at $105,474,234 in 1925.

The total production of wrapping paper in 1929 was 1,605,783 tons valued at $163,442,382 as compared with 1,525,305 tons valued at $162,579,549 in 1927 and 1,292,049 tons valued at $143,587,475 in 1925.

The total production of glassine in 1929 was 47,438 tons valued at $9,736,951 as compared with 38,644 tons valued at $9,005,642 in 1927.

The total production of Northern kraft in 1929 was 375,254 tons valued at $40,530,615; the total production of Pacific Coast kraft in 1929 was 54,961 tons valued at $4,847,524; the total production of Southern kraft in 1929 was 282,019 tons valued at $23,121,332.

The total production of boards in 1929 was 4,451,187 tons valued at $227,741,517 as compared with 3,773,608 tons valued at $211,263,885 in 1927 and 3,286,580 tons valued at $192,941,535 in 1925.

The total production of tissue in 1929 was 387,811 tons valued at $53,300,059 as compared with 316,070 tons valued at $46,616,919 in 1927 and 281,243 tons valued at $45,734,920 in 1925.

The total production of absorbent papers in 1929 was 90,800 tons valued at $16,972,984 as compared with 63,766 tons valued at $13,331,497 in 1927 and 51,126 tons valued at $9,999,928 in 1925.

The total production of building paper in 1929 was 659,178 tons valued at $39,375,990 as compared with 625,589 tons valued at $40,062,025 in 1927 as compared with 582,400 tons valued at $45,691,878 in 1925.

The total production of wood pulp of all varieties in 1929 was 4,862,885 tons valued at $223,176,096 as compared with 4,510,800 tons valued at $206,490,469 in 1928 and 4,313,403 tons valued at $207,332,666 in 1927.

The total production of steamed ground wood in 1929 was 163,238 tons valued at $6,605,759 as compared with 64,748 tons valued at $1,737,779 in 1928 and 175,088 tons valued at $6,649,705 in 1927. The total production of ground wood not steamed in 1929 was 1,474,415 tons valued at $40,617,139 as compared with 1,546,240 tons valued at $42,064,031 in 1928 and 1,435,321 tons valued at $39,309,498 in 1927.

The total production of soda fiber in 1929 was 520,729 tons valued at $34,064,784 as compared with 488,641 tons valued at $31,662,638 in 1928 and 487,478 tons valued at $32,842,265 in 1927.

The total production of bleached sulphite fiber in 1929 was 839,953 tons valued at $62,152,903 as compared with 722,107 tons valued at $55,560,276 in 1928 and 680,288 tons valued at $53,847,246 in 1927. The total production of unbleached sulphite fiber in 1929 was 841,558 tons valued at $40,812,205 as compared with 836,751 tons valued at $39,816,951 in 1928 and 872,411 tons valued at $44,779,425 in 1927.

The total production of sulphate fiber in 1929 was 918,084 tons valued at $37,173,860 as compared with 774,225 tons valued at $33,558,493 in 1928 and 603,253 tons valued at $28,691,055 in 1927.

The total production of semi-chemical pulp in 1929 was 40,481 tons valued at $797,645 as compared with 29,967 tons valued at $1,321,782 in 1928 and 11,983 tons valued at $506,151 in 1927.

TAPPI Notes

Herman Heimann, formerly chemist of the Algonquin Paper Company, Ogdensburg, N. Y. has returned to America from Duren, Germany, and is at present located at Rumford, Maine.

Any TAPPI member interested in digester safety specification factors may attend a special meeting during the annual convention. Notify R. G. Macdonald, 370 Lexington avenue, New York, if interested.

The TAPPI annual meeting papers which have appeared in the PAPER TRADE JOURNAL during the past few weeks will not be included in the preprints that will be available at the meeting. Members should bring such papers along with them for consultation.

TAPPI members desirous of visiting some outstanding New York City power plants should meet M. H. Teaze at the TAPPI registration desk at the Pennsylvania hotel, Monday, February 15th at 10:00 a.m.

Francis G. Rawling has resigned his position as research chemist at the Mead Corporation and is now located at 65 West Fifth street, Chillicothe, Ohio.

The Delaware Valley Section of TAPPI will have its next meeting Friday evening, February 19 at the Engineers Club in Philadelphia. This date was selected so that TAPPI members attending the annual meeting can stop over for the section meeting.

Erich Richter, formerly chemist of the British Columbia Pulp and Paper Company, Vancouver, B. C. is now chemical engineer at the Metabetchouan Sulphite & Power Company, Ltd., Desbiens, P. Q.

Alistair Ross, Col. Chadwick and G. M. Noworth of the Clyde Paper Mills Ltd., Rutherglen, Scotland, (TAPPI corporate members) are visiting in the United States and expect to attend the annual meeting.

P. Dayton Switzer, formerly of the Moore & White Company, Philadelphia, has joined the sales organization of the Cherry River Paper Company.

Roger J. Egan of Bulkley-Dunton Company, has changed his headquarters from Kalamazoo to Chicago.

E. Leon Foreman formerly chemical engineer for the Masonite Corporation, Laurel, Mississippi, is now in the research department of the Bogalusa Paper Company.

L. S. Dixon formerly of the Canadian International Paper Company, Temiskamking, P. Q. is now with the E. B. Eddy Company Ltd., Hull, P. Q.

H. A. Des Marais formerly technical representative of the General Dyestuff Corporation in New England, is now located at Portland, Oregon.

Indexes to the TAPPI Section of Volume of the PAPER TRADE JOURNAL (July to December, 1931) are available. Send request to TAPPI, 370 Lexington avenue, New York.

W. Ronald Benson, formerly chemist at the Port Townsend, Wash., mill of the National Paper Products Company, has joined the technical staff of the Du Pont Rayon Company, Buffalo, N. Y.

Columbia University, New York City, is offering to technical men who are out of employment, the privilege of attending courses without paying matriculation or other tuition fees. Of interest to TAPPI members is the course Chemical Engineering 238, Cellulose, which is given by Professor Ralph H. McKee. This is a discussion of the recent developments in the knowledge of the structure of cellulose, the degeneration products of cellulose, and the use of cellulose in the manufacture of pulp and paper, cellophane, rayon and related products.

Harold Brakewood has resigned his position as chemical engineer at the Scott Paper Company and is at present located at 613 Yale Avenue, Morton, Pa

The Lake States Section of TAPPI met on February 9 at Menasha, Wis. Two papers were presented for discussion. A. C. Embshoff, engineer of the International Filter Company, Chicago, discussed, "The Treatment of Water for Paper Mill Process and Boiler Feed Supplies" and C. M. Baker, engineer of the A. P. P. A. discussed, "White Water Utilization and Slime Control."

George F. Kennedy of 258 High Street, Newburyport, Mass. has announced that he is no longer handling the New England pulp agency of Parsons and Whittemore, Inc.

New TAPPI Members

Edward J. Albert is manager of the Thwing Instrument Company, Philadelphia, Pa. since 1918 and was formerly associated with the Canadian Allis-Chalmers Manufacturing Company in Toronto.

Henry F. Bigelow Jr., Eastern sales manager of the Pulp Division of the Weyerhaeuser Timber Company, Longview, Wash., attended Harvard University and was for eleven years associated with Atterbury Bros. Inc. in New York City.

James T. Coghill, manager of the experimental paper mill of Noble & Wood Machine Company, Hoosick Falls, N. Y. is a graduate mechanical engineer of the University of Kansas. He was formerly an engineer for the Dodge Manufacturing Corporation of Mishawaka, Indiana. Recently Mr. Coghill was appointed chairman of the TAPPI stuff preparation committee.

George J. Brabender of the research staff of the Marathon Paper Mills Company, Rothschild, Wisconsin, has been transferred from Junior to Active membership in TAPPI.

Arthur F. Gallaugher, chief chemist of the Interlake Tissue Mills Company Ltd., Merritton, Ontario, is a graduate of McGill University. Doctor Gallaugher formerly worked for the Powell River Company Ltd., Powell River, B. C.

Harold R. Miller, has been assistant chemist of the Paper Makers Chemical Corporation for the past six years and is a graduate of Kalamazoo College. Until recently Mr. Miller was secretary of the Kalamazoo Valley Section of TAPPI.

Robert D. McCarron is a student at the Institute of Paper Chemistry, Appleton, Wisconsin, and is a graduate of the Massachusetts Institute of Technology. Mr. McCarron was formerly with the Kimberly-Clark Corporation, Kimberly, Wisconsin.

Harold R. Myers, New England sales manager of Hungerford & Terry Inc. of Clayton, N. J. is a graduate of Queens University in Canada and Syracuse University. He was formerly a civil engineering instructor at Syracuse, and chief engineer of Hungerford & Terry, Inc.

Le Clare F. Parmenter was until recently assistant sulphite superintendent of the S. D. Warren Company, Cumberland Mills, Maine. He is a graduate of Bowdoin College and was formerly a research chemist with the Diamond Match Company.

Milton L. Rubin, paper tester of Fraser Paper Ltd., Madawaska, Maine, attended the pulp and paper school at Edmundston, N. B.

F. A. Soderberg, paper color technologist of the General Dyestuff Corporation has been transferred from Associate to Active TAPPI membership.

Harold C. Webber is a graduate of the University of Maine and is at present chemist of the Munising Paper Company, Munising, Michigan.

(No. 9 of a series of advertisements tracing the development and uses of modern chemicals.)

HIGH SPOTS IN CHEMICAL HISTORY

Mixing plant of Jersey City Water Works which was the center of the famous legal battle of 1908. It was developed in this suit brought by Jersey City against the Jersey City Water Co. that water treated by bleaching powder was sterile and entirely safe. This view of the first large installation in the U. S. for chlorinating city water shows Mathieson Bleaching Powder being added to mixing tanks originally installed by Col. Geo. A. Johnson.

Battery of Mathieson Liquid Chlorine cylinders used for supplementary chlorination at the Jersey City Water Works.

WATER PURIFICATION

TWENTY-THREE years ago, the summer of 1908, saw the opening of a famous trial in American history. Scientific men and municipal officials from all over the world discussed it with increasing interest... came to the crowded court-room and gave ten volumes of expert opinion... proved beyond question that the first large American installation for purifying city water with bleaching powder was both safe and practicable.

About this time liquefied chlorine gas came on the market, and within two years after the installation of the first treating tanks at Boonton, New Jersey, several municipalities had started applying liquid chlorine. The use of liquid chlorine for large scale application has constantly widened because it is more economical and provides a more uniform dosage than bleaching powder.

More recently, the ammonia-chlorine process has made it possible to eliminate one of the oldest bugaboos associated with chemically treated water... the presence of certain phenolic and chlorinous odors and tastes. Pre-ammoniation increases the efficiency of chlorination, helps prevent algae and after-growths in distributing systems and may be employed at unusually low cost.

COL. GEORGE A. JOHNSON
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As one of the oldest producers and distributors of bleaching powder, chlorine and ammonia, Mathieson has had the privilege of cooperating with many leading water works officials in supplying these essential chemicals for water purification. H T H, the concentrated calcium hypochlorite now used so extensively in the sanitation field, was developed by Mathieson chemists and engineers and made available to industry by the Mathieson organization.

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Section of the

Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

The National Research Council, 21st and B Street, Washington, D. C. through Dr. Clarence J. West, extends the courtesy of its photostat service to members of the Technical Association of the Pulp and Paper Industry. Owing to a limitation of personnel and time, this service can not be extended to non-members.

The charge for the photostat service is: 9 x 11 inches—18 cents per page, 18 x 11 inches—35 cents per page, 22 x 18 inches—70 cents per page, minimum charge, 50 cents.

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Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C. for 10 cents each. Send currency, not stamps.

Drying

Explosion of a Drying Cylinder in a Vosges Paper Mill. V. Kammerer. Papier 34: 737-743 (July 1931); Pulp Paper Mag. Can. 30: 1075-1076 (Sept. 24, 1931).—Investigation of the accident indicated that the bursting of the head was caused by the additional strains resulting from uneven temperature distribution during the warming period, these strains being aggravated owing to the fact that the cylinder was not turning and that it was partly filled with cold water which remained in the lower portion of the drier. The abnormal composition of the metal, its poor quality and low strength, and the presence of small cracks in the reinforcing ribs are considered as the remote causes of the accident. Though no deterioration of the metal on account of wear or of temperature was observed, it is considered probable that the repeated strains produced by steam pressure and by periodical heating contributed to the fatigue of the metal.—A.P.-C.

Explosion of a Drying Cylinder in a Puy-De-Dome Paper Mill. E. Allar, Papier 34: 743-747 (July 1931); Pulp Paper Mag. Can. 30: 1101-1102 (Oct. 1, 1931).—From an investigation of the accident it was concluded that it was probably due to too rapid heating of the drier, the reason for which was not quite apparent but may have been the inadvertent closing of the valve of that particular drier, followed by opening it too wide, the resultant rapid heating producing local contractions in the metal which, in conjunction with shocks of the steam on the water in the drier, resulted in its failure.—A.P.-C.

Rotary Dewatering Screen. John Strindlund. U. S. pat. 1,816,132 (July 28, 1931).—The purpose of the inventor is to provide means for maintaining the difference in pressure between the outside and inside of the screen until the layer of pulp adhering to the outside surface has risen above the level of the pulp mixture in the vat. The cylinder mold is divided at its periphery into a number of cells or chambers covered on the outside by wire cloth. Each cell communicates with one or more outflow pipes or passages which are bent backwards with respect to the direction of rotation, and the length of which is such that the outflow end of the pipes does not rise out of the water in the interior of the cylinder before the cell communicating with the pipe or pipes has passed above the level of the pulp mixture.—A.P.-C.

Device for Treating Fibers. Michail Buroff. U. S. pat. 1,815,493 (July 21, 1931).—The patent provides a means of impregnating and dewatering fibers as a continuous process. The material is fed into a double-walled hopper, the inner wall of which is perforated so that the material may be given a preliminary moistening. From the hopper it passes into a horizontal casing in which is a rotating worm. Through part of its length the casing is cylindrical and the shaft of the worm is hollow to permit of admission of water. The remainder of the casing is in the form of a converging frustum of a cone, and the pitch and diameter of the worm in this portion decrease correspondingly and serves to squeeze liquid out of the pulp through the perforated wall of the casing. The pulp is discharged into a breaker or opener, whence it may be passed to a second similar machine and finally into a conveyor which carries it away for further treatment.

Influence of the Length of the Drying Cylinder on the Sheet of Paper. Wochbl. Papierfabr, 62, No. 13: 306 (March 28, 1931).—It is often the practice in paper mills to endeavor to make paper of a size which is too large for the machine. When this is the case, all seems to go well until the paper comes on to the winder where the sheet is stretched and tears easily. And one sided papers do not take on an even finish. The cause for these troubles lies in the fact that the paper is not evenly dried the entire width due to the fact that there is an excess of metal at the ends of the drying cylinders which naturally hinders the heat interchange.—J.F.O.

Rational Drying of Board. Wochbl. Papierfabr. 62, No. 26: 621-623 (June 27, 1931).—In the first stages of drying the capillary water is removed and in the second stage the water physically bound with the fibers. The favorable conditions for drying paper so as not to lose any of its sizing qualities is enumerated. The principle of multiple evaporation is used in a dryer designed by the authors in which there is little loss of strength qualities of the paper while drying.—J.F.O.

Comparative Pulping Value of Russian and Canadian Spruce by the Sulphite Process*

By W. H. Monsson[1] and G. H. Chidester[2]

Synopsis

Sulphite pulping tests on two lots of spruce from Canada and one lot from Russia indicate no significant difference in the quality of the pulp produced from each lot. Also no difference was indicated in the yield of pulp produced when calculated on the basis of the weight of the wood used. When calculated on a volume basis, however, the yield of pulp varied with the density of the wood, which was considerably lower in one of the lots of Canadian spruce than in the other two.

Introduction

The experiments reported herein had as their objective the determination of the comparative pulling quality of a sample of spruce pulp wood from Russia and two shipments of standard Canadian spruce.

Materials

Three lots of pulp wood were forwarded to the Forest Products Laboratory in October, 1930. Microscopical examination showed all lots, except as otherwise noted, to be spruce but no positive identification could be made of the exact species because the bark had been removed prior to shipment. The wood from Russia was thought to be Norway spruce (Picea excelsa).

Lot No. 1, consisting of seven drum-barked logs, was representative of the pulp wood now purchased from Quebec. This shipment will hereafter be referred to as Spruce No. 1.

Lot No. 2, also consisting of seven drum-barked logs, was representative of pulp wood from Ontario. The logs had a small amount of inner bark adhering to them and were darker colored than the wood from Spruce No. 1, or the Russian wood. This wood is hereafter referred to as Spruce No. 2.

Lot No. 3 comprised 10 logs. This material was reported to have been cut in the Archangel district, which is the extreme northern section of Russia. The logs were very clean and apparently had been hand barked by means of draw knives. In the following report this wood is referred to as Spruce No. 3.

Evaluation of Pulp Wood

Since the pulp wood was peeled when received, it could not be put through all of the tests usually made in evaluating pulp wood received at the Forest Products Laboratory. About 2 cords of unbarked pulp wood are required for a complete evaluation. However, enough tests were made on the logs received to give needed data.

Physical Evaluation

Two discs each of approximately 1 inch thickness were cut from the center of each log. One disc was used for evaluation purposes while the other was used for identification. Upon identifying the species, it was found that two of the logs of Spruce No. 1 were true firs and not spruce.

The average specific gravity values indicated that the pulp wood logs of Spruce No. 1 were the lightest in weight of the three shipments. (Table 1.) The average specific gravity for Spruce No. 1 was 0.343, or 21.4 pounds per cubic foot, on the green volume basis. The logs in Spruce No. 2 were the heaviest with an average specific gravity of 0.418, or 26.1 pounds per cubic foot, on the same basis. The average specific gravity of Spruce No. 3 was 0.392, or 24.5 pounds per cubic foot, on the green volume basis.

The rates of growth of the logs in Spruce Nos. 2 and 3, as indicated by the number of annual growth rings per inch of radius, were 21.8 and 21.9 rings per inch, respectively. The wood from Spruce No. 1 showed much faster growth and averaged 9.1 annual rings per inch of radius.

A color analysis, given in Table 1, showed that Spruce No. 1 was somewhat lighter in color than Spruce Nos. 2 or 3. The colors of the two latter woods were practically the same as a standard sample of white spruce from Michigan and Wisconsin.

Chemical Analysis

As the logs were being chipped a representative sample of several pounds of the chips from each lot was taken and prepared for chemical analysis by grinding and sifting. The material passing through a 40-mesh sieve and remaining on a 60-mesh sieve was used for analysis. The results of the chemical analysis on each of the three samples are shown in Table 2. It may be noted that the cellulose content of the wood from Spruce No. 2 was slightly lower than the value shown for the others. However, the alpha cellulose, or resistant cellulose content, was practically the same for the wood from Spruce Nos. 1 and 2 and slightly lower for Spruce No. 3. These close checks on the alpha cellulose content in all three lots and the almost identical lignin content of the three species, points toward similar yields of pulp on the basis of weight from any particular lot, assuming the use of the same digestion conditions. The alkali-soluble figure of 13.9 per cent for Spruce No. 2 was slightly higher than ordinarily obtained on spruce. The hot-water-soluble material was also slightly higher for Spruce No. 2 than for either Spruce Nos. 1 or 3, but the hot-water-soluble figure usually varies in the same way as alkali solubility.

There was very little difference in the amount of alcohol-benzene-soluble material of the three pulp woods. The percentages of ether-soluble material and the total pentosans were also practically the same for all three woods.

* To be presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 15-18, 1932. Written discussion of this paper is welcome and should be sent to R. G. Macdonald, 370 Lexington Ave., New York, N. Y.
Contribution of the TAPPI acid pulping committee.

[1] Member TAPPI, formerly associate chemist, Forest Products Laboratory, maintained by the U. S. Department of Agriculture, at Madison, Wis., in cooperation with the University of Wisconsin.

[2] Member TAPPI, associate engineer, Forest Products Laboratory.

TABLE 1—PHYSICAL EVALUATION OF PEELED PULP WOOD
(Average values)

Species	Place of growth	Moisture content per cent	Specific gravity: Green (as received)	Specific gravity: Oven dry, based on volume when green	Specific gravity: Oven dry based on volume when oven dry	Weight per cubic foot: Green (as received), pounds	Weight per cubic foot: Oven dry, based on volume when green, pounds	Weight per cubic foot: Oven dry, based on volume when oven dry, pounds	Annual growth rings, number	Diameter, inches	Growth rate, rings per inch of radius	Weight per cubic foot of oven-dry chips ⅝ inch long, pounds	Hess-Ives color analysis: Red	Hess-Ives color analysis: Green	Hess-Ives color analysis: Blue
Spruce No. 1	Quebec	24.0	0.455	0.343	0.376	28.4	21.4	23.5	31	6.8	9.1	7.75	71	55	46
Spruce No. 2	Ontario	19.9	.523	.418	.463	32.6	26.1	28.9	75	6.8	21.8	10.60	69	52	40
Spruce No. 3	Russia	18.6	.482	.392	.432	30.1	24.5	27.0	66	6.0	21.9	10.50	69	52	41

Equipment and Materials Used

The experimental digestions were made in the Forest Products Laboratory semicommercial digester which has a capacity of 75 to 100 pounds of oven-dry chips, depending on the specific gravity of the wood used.

The cooking acid was prepared by passing sulphur dioxide gas into a suspension of slaked lime in water containing the relieved gas from a previous digestion. The concentration of the acid was so adjusted as to approximate 5.50 per cent total sulphur dioxide and 1.10 per cent combined sulphur dioxide.

The chips were prepared for pulping by screening them over a wire screen having three meshes to the inch. This screening removed the sawdust and fine material. Knots and oversized chips were removed by hand. Samples for moisture determination were removed during the screening operation.

Experimental Procedure

DIGESTION CONDITIONS

All of the pulping experiments were made by the "quick-cook" process. In order to counteract the excessive condensation of steam caused by the abnormal radiation of the semi-commercial equipment, both direct and indirect steam heating were used. The amount of direct and indirect steam used was so regulated in amount that the dilution effect was similar to that obtained in average commercial practice. The amount of liquid relief for each digestion amounted to 15.5 per cent of the original volume of digestion acid.

The temperature and pressure schedules followed for each digestion are approximate duplicates of schedules used at a large commercial mill. The schedules followed for each pulping trial are shown graphically in Fig. 1 and 2. Owing to an oversight during the first pulping experiments, only 3½ hours were used for penetration in place of 4 hours as recommended. This slight difference in the penetration period should have practically no effect on the final results.

Since a hot sample of sulphite liquor loses considerable sulphur dioxide as soon as exposed to the air, the usual tests on the cooking liquor in these quantitative laboratory experiments were made on cold samples. The relief period was begun 15 minutes before the "blow" of each digestion, which procedure reduced the pressure from 70 pounds to 50 pounds. A 15-minute relief period for the semi-commercial digester is approximately equal to 30- to 45-minute relief period for a commercial digester.

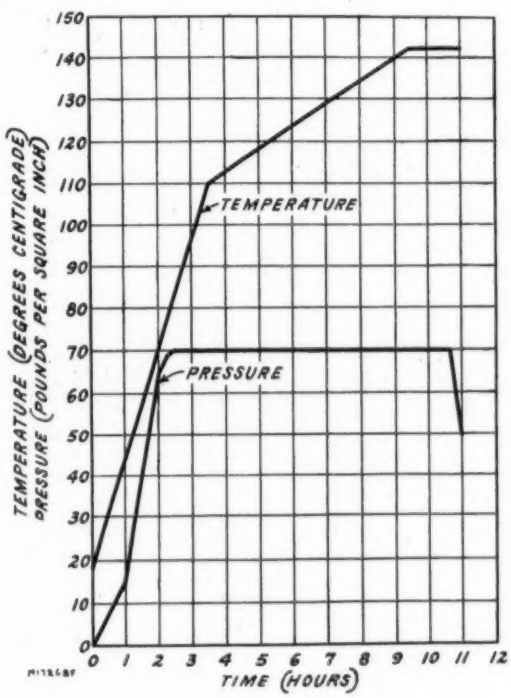

Fig. 1
Temperature-pressure schedule for Spruce No. 1

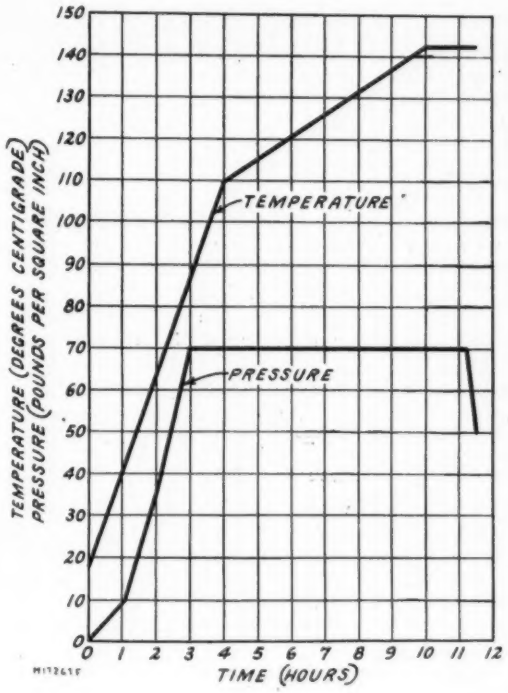

Fig. 2
Temperature-pressure schedule for Spruce Nos. 2 and 3

YIELD

Yield determinations were made in the following way: The pulp from each cook was separated into screened pulp and screenings by means of a diaphragm screen equipped with 0.012-inch cut plates. The screened pulp was run over a wet machine to eliminate a portion of the water and was then weighed. Samples of pulp were taken at regular intervals during the run and moisture determinations made on the combined samples. Knowing the weight of the oven-dry pulp, the yield of pulp was determined on the basis of the weight of the oven-dry wood. The entire quantity of screenings, which was small, was oven dried and weighed.

BLEACHABILITY

The bleach requirements of the three pulps were determined by treating a sample, equivalent to 30 grams of oven-dry pulp, in a water suspension at a consistence of 1.5 per cent with varying ratios of bleach powder to pulp. The temperature was maintained constant at 35 deg. C. Each batch of pulp was stirred

TABLE 2—CHEMICAL ANALYSIS (40-60 MESH SAWDUST)

Species	Place of growth	Cellulose, per cent	Alpha cellulose, per cent	Lignin, per cent	1 per cent NaOH soluble, per cent	Hot water soluble, per cent	Alcohol-benzol soluble, per cent	Ether soluble, per cent	Total pentosans, per cent
Spruce No. 1	Quebec	62.0	43.2	30.0	11.0	2.4	2.2	1.2	12.5
Spruce No. 2	Ontario	59.8	42.9	30.3	13.9	3.2	2.8	1.2	12.8
Spruce No. 3	Russia	61.7	42.0	30.5	12.0	2.4	2.9	1.5	12.3

continuously until the bleach was exhausted, then washed thoroughly, made up into hand sheets, and dried. After pressing the dry sheets, color measurements were made on the samples by means of a Hess-Ives tint photometer. Samples of bleached Burgess sulphite pulp were used as a standard for comparison. The bleach requirement of the pulps was taken as the amount of standard of bleach powder (35 per cent available chlorine) required to bleach the sample of pulp to the same degree of whiteness as the standard.

STRENGTH OF PULP

The strength properties of the pulps were determined by means of the pebble mill method used at the Forest Products Laboratory. Bursting strength, folding endurance, tear, and tensile strength tests were made of test sheets prepared after 0, 20, 40, 60, and 80 minutes of beating in a ball mill.

PAPER-MAKING TEST

A portion of each pulp was run into waterleaf sheets on a small Fourdrinier paper machine. A light beater treatment was given each pulp before running it on the paper machine.

Discussion of Results

Similar pulp yields were obtained from Spruce Nos. 1 and 3, both screened pulp and screenings. (Table 3.) The higher yield shown for Spruce No. 2 is so slight as to be within the range of experimental error in the method of yield determination. For all practical purposes, therefore, the yield for all three pulp woods on the basis of the weight of the even-dry wood may be considered the same.

COLOR OF UNBLEACHED PULPS AND BLEACH REQUIREMENT

The color of the pulps varied somewhat. (Table 4.) The pulp from Spruce No. 2 was lower in color than that from Spruce Nos. 1 and 3. The pulp from Spruce No. 3 was the brightest.

The bleach requirements of the pulps from Spruce Nos. 1 and 3 were each 16 per cent of standard bleaching powder. The pulp from Spruce No. 2 required 20 per cent standard bleaching powder to produce the same whiteness[3] as the other two pulps. The increased bleach requirement and lower unbleached color of the pulp from Spruce No. 2 was probably partly because of the inner bark on the peeled logs, which is usually not removed by the sulphite pulping chemicals.

STRENGTH DEVELOPMENT

Bursting strength. The bursting strength tests on the three pulps, as determined by the pebble mill method, were almost identical checks for each beating period. (Table 5.) The maximum bursting values determined were at 80 minutes beating, and no runs were made of greater length. Continued beating might have resulted in even higher bursting strength values.

Folding endurance.—The folding endurance of the pulps varied somewhat for each beating period although the same trend toward a maximum, as indicated by the 80-minute test, was noticed in each pulp with the exception of the pulp from Spruce No. 1, which developed a maximum in 40 minutes. (Table 5.) The pulp from Spruce No. 2 developed the highest folding endurance in 80 minutes treatment; the pulp from the Spruce No. 3 was next in line; and the pulp from Spruce No. 1 was the lowest.

Tearing strength.—The maximum tearing strength of all three pulps developed after 40 minutes treatment in the pebble mill.

[3] The pulp used for standard whiteness for comparison is a sheet of bleached Burgess sulphite pulp which ordinarily gives color figures of 90 to 92 red, 88 to 90 green, and 83 to 86 blue.

TABLE 4
BLEACH REQUIREMENT AND HESS-IVES COLOR ANALYSIS OF UNBLEACHED AND BLEACHED PULPS

Species	Place where grown	Per cent color of unbleached pulps			Bleach requirement on basis of 35 per cent bleach powder	Per cent color of bleached pulps		
		Red	Green	Blue		Red	Green	Blue
Spruce No. 1	Quebec	76	65	62	16	89	87	82
Spruce No. 2	Ontario	72	63	57	20	90	87	83
Spruce No. 3	Russia	77	70	66	16	88	87	82

TABLE 3—COOKING CONDITIONS AND YIELD OF PULP

Species	Place of growth	Weight of chips when—		Acid volume, gals.	Acid composition			Time of digestion, hours	Time required to reach 110° C., hours	Maximum temperature ° C.	Time required to reach maximum temperature, hours	Maximum pressure (gauge) Lbs. per sq. in.	Yield of pulp (based on weight of oven-dry wood)			Freeness of pulp unbleached (based on overflow at 20° C.
		Wet, pounds	Oven-dry, pounds		Total SO_2, per cent	Combined SO_2, per cent	Free SO_2, per cent						Total, per cent	Screened, per cent	Screenings, per cent	
Spruce No. 1	Quebec	96.3	75.0	55	5.56	1.16	4.40	11.0	3.5	142	9.5	70	49.1	47.8	1.3	594
Spruce No. 2	Ontario	92.0	75.0	55	5.44	1.18	4.26	11.5	4.0	142	10.0	70	49.9	48.4	1.5	614
Spruce No. 3	Russia	91.5	75.0	55	5.56	1.12	4.44	11.5	4.0	142	10.0	70	49.1	47.8	1.3	651

TABLE 5—PEBBLE MILL STRENGTH TESTS

Species	Place where grown	Bursting strength factor after treatment in the pebble mill for—					Folding endurance after treatment in the pebble mill for—					Tearing strength factor after treatment in the pebble mill for—					Tensile strength after treatment in the pebble mill for—				
		0 min., pts. per pound per ream	20 min., pts. per pound per ream	40 min., pts. per pound per ream	60 min., pts. per pound per ream	80 min., pts. per pound per ream	0 min., double folds	20 min., double folds	40 min., double folds	60 min. double folds	80 min., double folds	0 min., grams per pound per ream	20 min., grams per pound per ream	40 min., grams per pound per ream	60 min., grams per pound per ream	80 min., grams per pound per ream	0 min., meters	20 min., meters	40 min., meters	60 min. meters	80 min., meters
Spruce No. 1	Quebec	0.51	0.74	1.00	1.06	1.10	163	268	934	801	826	1.65	1.90	2.01	1.83	1.92	2699	3763	4870	4968	3441
Spruce No. 2	Ontario	.50	.82	1.00	1.05	1.10	157	548	789	1222	1659	1.75	1.85	1.93	1.78	1.53	3308	4275	4595	4577	4119
Spruce No. 3	Russia	.38	.74	0.98	1.08	1.09	8	142	497	554	1084	1.30	2.02	2.44	2.14	1.80	2279	3090	4442	4410	4471

TABLE 6—WEIGHTS PER CORD OF PULP WOOD AND YIELDS OF PULP PER CORD

Species	Place of growth	Weight per cubic foot, oven dry, based on volume when green, as received Pounds	Estimated volume per cord of peeled wood Cubic feet	Weight per cord, volume times, weight, oven dry, and volume when green Pounds	Yield of pulp per cord: Total Pounds	Yield of pulp per cord: Screened Pounds	Amount of peeled wood required to produce 1 ton (oven dry) of Screened pulp Cords	Saving in wood per ton of screened pulp Cords	Monetary saving in wood per ton [1] of screened pulp produced Dollars	Rated capacity of 10-ton digester Tons
Spruce No. 3	Russia	24.5	95.0	2328	[2] 968	942	2.12	...	...	8.11
Spruce No. 1	Quebec	21.4	91.5	1958	[2] 1193	1162	1.72	0.40	5.60	[3] 10.00
Spruce No. 2	Ontario	26.1	92.5	2414	[2] 1150	1120	1.79	.33	4.62	9.55

[1] An average cost figure of $14 per cord of pulp wood used as basis.
[2] An average total yield of 49.4 per cent used, screenings 1.3 per cent.
[3] Assuming a 10-ton digester capacity on Spruce No. 2.

(Table 5.) The highest value was obtained on the pulp from Spruce No. 3, which gave a tearing strength factor of 2.44 grams per pound per ream.

Tensile strength.—The maximum tensile strength developed at different beating periods for each pulp. (Table 5.) The pulp from Spruce No. 1 developed the highest tensile strength, which was 4968 meters, in 60 minutes beating time. The pulp from Spruce No. 3 developed the lowest tensile strength.

ESTIMATION OF PULP YIELD PER CORD OF PEELED WOOD

An accurate comparison of the pulp yields obtainable per cord from each lot of pulp wood was impossible because of lack of data on the actual solid volume of wood in a cord of each of the different lots. For comparative purposes, however, the following values were assumed, making allowances for the fact that the wood in lot No. 2 was straighter than in lot No. 1 and the wood in lot No. 3 straighter than in No. 2, which would increase slightly the solid volume in a cord; Spruce No. 1, 91.5 cubic feet per cord, Spruce No. 2, 92.5 cubic feet per cord, Spruce No. 3, 95 cubic feet per cord.

As noted previously, the pulp yields, based on the weight of the oven-dry wood, were practically the same from all three woods. However, this is not so on the cord basis. The cord weights given in Table 6 were computed from the average weights per cubic foot (green volume, or as received, basis) determined for each lot of wood. Differences in weight per cord amount to as much as 456 pounds. In calculating the yields per cord average yield figures of 49.4 per cent for total yield and 1.3 per cent for screenings were used. These figures show a decided increase in yields per cord from Spruce No. 2 and Spruce No. 3. For example, where Spruce No. 1, the lightest wood, would yield 942 pounds of pulp per cord, Spruce No. 2 would yield 1193 pounds per cord and Spruce No. 3, 1150 pounds per cord.

The advantages to be gained by using pulp wood of the type represented by Spruce Nos. 2 and 3 are significant. The amount of pulp wood required to produce 1 ton of screened pulp, as calculated from the data in Table 6, from pulp wood similar to that of Spruce No. 1 would be 2.12 cords as compared to 1.72 from Spruce No. 2 and 1.79 cords from Spruce No. 3. In other words, the use of the pulp woods of higher specific gravity, such as Spruce Nos. 2 and 3, results in a saving of 0.40 and 0.33 cords of wood, respectively, per ton of screened pulp. Assuming an average cost of $14 per cord of pulp wood, the saving would be approximately $5.60 and $4.62 respectively, per ton of screened pulp.

There is also the yield of pulp per digester to be considered. If the digester has a rated capacity of 10 tons of pulp based on a pulp wood having a specific gravity similar to that of Spruce No. 2, digester yields would be considerably lower with a pulp wood like Spruce No. 1. As shown in Table 6, the digester tonnage would only be 8.11 tons with Spruce No. 1 as compared to 9.55 tons with Spruce No. 3.

A series of chemical, physical, and sulphite pulping tests have been made at the Forest Products Laboratory on three representative lots of peeled spruce pulp wood from Canada and Russia.

A chemical analysis of all three lots gave results in agreement with previous chemical analyses of spruce pulp wood shipments. The analyses of all three lots were similar to each other.

Physical evaluation of each lot of pulp wood showed that Spruce No. 1, which was from Quebec, was the lightest in weight, having a specific gravity of only 0.343, or 21.4 pounds per cubic foot, based on the weight of the oven-dry wood and the volume when green. Spruce No. 2, which was from Ontario, had a specific gravity of 0.418, or 26.1 pounds per cubic foot. Spruce No. 3, which was from Russia, had a specific gravity of 0.392, or 24.5 pounds per cubic foot.

Spruce No. 1 showed the most rapid growth rate of the three lots with an average of 9.1 annual rings per inch. Spruce Nos. 2 and 3 were of slower growth but almost identical with each other, having 21.8 and 21.9 annual growth rings per inch, respectively.

The color of the three woods, as determined by a Hess-Ives tint photometer, indicated Spruce No. 1 to be slightly better in color than Spruce Nos. 2 and 3.

Sulphite pulping experiments with digester conditions similar to mill practice showed that the yield of pulp on the basis of the weight of the oven-dry wood was the same for all three pulp woods. However, on the cord basis, using estimated values of 91.5, 92.5 and 95 cubic feet per cord of peeled wood for Spruce Nos. 1, 2, and 3, respectively, Spruce No. 1 would yield only 942 pounds of screened pulp, Spruce No. 2, 1162 pounds of screened pulp, and Spruce No. 3, 1120 pounds of screened pulp.

Physical tests on the three pulps, as indicated by the pebble mill method, showed that they were similar as regards strength properties.

Two of the pulps, those produced from Spruce Nos. 1 and 3, bleached with 16 per cent of bleach powder, whereas the pulp from Spruce No. 2 required 20 per cent of bleach powder.

A definite saving in wood consumption per ton of screened pulp can be effected using Spruce Nos. 2 and 3 in place of Spruce No. 1. The yield per cubic foot of digester volume was also increased using Spruce Nos. 2 and 3 in place of Spruce No. 1.

Chemicals Used in Paper Making in Canada

The wood pulp and paper industry of Canada consumed in 1930, according to information sent to the Department of Commerce by the assistant trade commissioner at Toronto, the following chemicals:—

IN MANUFACTURE OF WOOD PULP

	Tons	Value
Sulphur	154,889	$3,689,617
Limestone	169,020	529,879
Lime	81,407	812,822
Soda ash	1,545	60,796
Liquid chlorine	14,192	925,949
Other bleach	6,604	147,473
Salt cake	33,119	676,597
Common salt	8,960	91,730
All other chemicals	681	32,556
Totals	470,417	$6,967,419

IN MANUFACTURE OF PAPER

	Tons	Value
Soda ash	1,993	$70,864
Alum	21,951	630,410
Clay	13,024	218,423
Size	7,028	516,928
Dyes and colors	.....	329,362
Other materials, including asphalt, rosin, caustic soda, talc, starch, copperas, lime, liquid chlorine, bleaching powder, and fillers	.....	4,384,563
Total	.....	$6,150,550

Effect of Alkaline Liquors on Some Alloys*

By G. H. McGregor[1]

The object of the detailed corrosion tests on various ferrous and non-ferrous alloys was to determine, in so far as possible the apparent resistance of these representative alloys to actual service conditions resulting from the alkaline processes. It is not the object of the writer to enter into any detailed metallographic discussion as to the relative merits or demerits of any particular group of alloys. These results are a record merely of observations of the action of the alloys when subjected to mill service. The ultimate value of these results can only be determined when materials such as valves and fittings, pumps, pipe, and so forth, are constructed of that particular alloy which shows the greatest resistance, given actual mill service.

It is the hope that these results may add to any additional data relative to chrome-nickel alloys which has been extensively investigated during the past few years.

In initiating these detailed tests, it was necessary to collect samples representing the more popular types of alloys in use today and fabricated by noteworthy, representative manufacturers. These concerns very readily submitted small samples, usually 3 x 4 x 1/16 inch in size. Both cast and in form of sheet. These samples were marked with a figure stamp, accurately weighed to .01 of a gram, dimensions accurately measured in millimeters, and calculated to square inches. A small

* To be presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 15-18, 1932. Written discussion of this paper will be welcome and should be sent to J. D. Miller, York Haven Paper Company, York Haven, Pa.
Contribution of the TAPPI materials of construction committee.
[1] Member TAPPI, instructor in pulp and paper technology, Institute of Paper Chemistry, Appleton, Wis.
NOTE: This report relates to experiments made at the Northwest Paper Company, Cloquet, Minn.

TABLE I.—ESSENTIAL NOMINAL COMPOSITION IN PER CENT OF ALLOYS TESTED

No.	Fe	Cr	Ni	Cu	Si	P	Nn	S	C	Zn	Mo	W	Al	Sn
A. FERROUS-REGULAR 16-18% Cr.														
7	Fe	16—18	.....	.....	.....	.....	.5	.....	.....	.....	.....	.....	.....	.....
14	Fe	16—18	.....	.....	.5	.....	.5	.....	.10	.....	.....	.....	.....	.....
44	Fe	15—18	.....	.....	.5	.025	.5	.025	.12	.....	.....	.....	.....	.....
REGULAR HIGH CHROMIUM														
6	Fe	27—30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
15	Fe	25—30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
REGULAR 18-8														
38	Fe	17—20	7—10	.....	.5	.025	1.0	.025	.2	.....	.....	.....	.....	.....
39	Fe	17—20	7—10	.....	.5	.025	1.0	.025	.2	.....	.....	.....	.....	.....
40	Fe	17—20	7—10	.....	.5	.025	.5	.025	.2	.....	.....	.....	.....	.....
49	Fe	16—20	7—10	.....	.75	.....	.6	.....	.07	.....	.....	.....	.....	.....
50	Fe	18—20	8—10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
52	Fe	18—22	7—10	.....	.75	.....	.6	.....	.16	.....	2—4	.....	.....	.....
1	Fe	18—19	8—9	1.2—1.7	.....	.....	.....	.....	.10	.....	1.2—1.7	.....	.....	.....
2	Fe	17.5—18.5	8.5—9.5	.....	.....	.....	.....	.....	.10	.....	.....	.....	.....	.....
4	Fe	16—19	7—10	.....	.75	.....	.5	.....	.15	.....	.....	.....	.....	.....
9	Fe	18	9	.....	.....	.....	.5	.....	.....	.....	.....	.....	.....	.....
13	Fe	16—20	8—12	.....	.5	.....	.5	.....	—.15	.....	.....	.....	.....	.....
30	Fe	16.5—20.0	7—10	.....	.75	—.03	—.50	—.03	—.16	.....	.....	.....	.....	.....
17	Fe	18—20	6.7—8.0	.....	.7—1.5	—.03	.5—.7	—.03	.3—.4	.....	.....	.....	.....	.....
REGULAR 23-11; AND 20-10														
3	Fe	22—25	10—13	.....	—.5	—.025	—1.0	—.025	—.2	.....	.....	.....	.....	.....
41	Fe	22—25	7—10	.....	.5	.025	1.0	.025	.2	.....	.....	.....	.....	.....
42	Fe	22—25	7—10	.....	.5	.025	1.0	.025	.2	.....	.....	.....	.....	.....
43	Fe	22—25	7—10	.....	.5	.025	1.0	.025	.2	.....	.....	.....	.....	.....
REGULAR 28-10														
36	Fe	28	8—10	.....	.5	.....	.5	.....	.15	.....	.....	.....	.....	.....
61	Fe	28	8—10	.....	.6—.8	.....	.5—.6	.....	—.2	.....	.....	.....	.....	.....
OTHER Cr-Ni ALLOYS														
48	Fe	18—21	19—23	.2—.4	2.7—3.7	.....	.5—.7	.....	.20	.....	1.0—1.5	.....	.....	.....
53	Fe	18—21	19—23	.2—.4	2.7—3.7	.....	.5—.7	.....	.20	.....	1.0—1.5	.....	.....	.....
35	Fe	20	20	Trace	—1.0	.....	.....	.....	—.15	.....	.....	Trace	.....	.....
67	Fe	28	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
56	Fe	13	60	.....	.....	.....	.....	.....	.....	.....	17.0	5.0	.....	.....
20	Fe	13	60	.....	.....	.....	.....	.....	.....	.....	17.0	5.0	.....	.....
16	Fe	24	56	8	Trace	.....	.....	Trace	Trace	.....	4	Trace	.....	.....
NON-CHROMIUM FERROUS METALS														
5	Fe	.....	67	28	1.0	.....	2.0	.....	.3—.5	.....	.....	.....	.....	.....
22	Fe	.....	.....	.45	.....	.....	.....	.....	.03	.....	.07	.....	.....	.....
24	Fe	.....	.03	.39	2.37	.370	.68	.114	3.3	.....	.....	.....	.....	.....
29	Fe	.....	.....	87.3	.....	.....	.....	.....	.....	.....	.....	.....	9.14	.....
33	Fe	.....	.....	.....	.003	.005	.017	.025	.012	.....	.....	.....	.....	.....
37	Fe	.....	.....	.....	13.5	.18	.4	—.05	1.0	.....	.....	.....	.....	.....
47	Fe	.....	.....	.....	14.5	.2	.35	.08	.85	.....	.....	.....	.....	.....
54	Fe	.....	60	.....	.....	.....	.....	.....	.....	.....	20	.....	.....	.....
55	Fe	.....	60	.....	.....	.....	.....	.....	.....	.....	20	.....	.....	.....
66	Fe	.....	60	33	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
B. NON-FERROUS ALLOYS														
21	..	.....	85	2.5	10	.....	.....	.....	.....	.....	.....	.....	2.5	.....
23	..	.....	20	75	.....	.....	.....	.....	.....	5	.....	.....	.....	.....
25	..	.....	18	55	.....	.....	.....	.....	.....	27	.....	.....	.....	.....
26	..	.....	18	65	.....	.....	.....	.....	.....	17	.....	.....	.....	.....
45	..	.....	94—96	3—4	.....	.....	1—1.2	.....	.....	.....	.....	.....	.....	.....
46	..	.....	.....	90	.....	.....	.....	.....	.....	.....	.....	.....	10	.....
58	..	.....	5	88.5	1.5	.....	.....	.....	.....	.....	.....	.....	.....	5.0
COMMON CAST IRON CONTROL														
60	Fe	.....	.....	.....	.....	.....	.....	.....	1.7—4.3	.....	.....	.....	.....	.....
COMMON SHEET STEEL CONTROL														
68	Fe	.....	.....	.....	.....	.....	.6	.....	.1—.3	.....	.....	.....	.....	.....

hole was drilled through each sample and a particular group to be placed in a certain position in the system, bolted to an iron bar in such a manner that no two samples touched each other, the only contact being between the alloy and a small iron washer.

Location of Samples

A group of the alloys, representing various chrome, chrome-nickel, Monel Metal, bronze, brass, common cast iron and steel metals, attached to a bar of iron was placed in five different positions in the alkaline system as follows:

1. In number one effect of Badger Evaporators containing sulphate black liquor at 30 to 33 degrees Baume at 100 deg. F.

2. In the sulphate cooking liquor containing approximately 150 grams per liter of NaOH and 40 grams per liter of Na_2S.

3. In sulphate green liquor containing approximately 50 grams per liter NaOH, 80 grams per liter of Na_2CO_3 and 80 grams per liter of Na_2S.

4. In alkaline hot water tanks. In this hot water may be found admixtures of evaporator condensate and dilute alkaline wash water.

5. In bleach liquor made by bubbling chlorine through milk of lime. The bleach liquor containing 30-32 grams per liter of chlorine.

In the Badger evaporator the bar to which the alloys were bolted was fastened to the baffle plate above the top tube sheet. In this position, the samples are continuously washed with highly concentrated black liquor and also exposed to any volatile organic acids distilled from the black liquor. In the sulphate cooking liquors, the alloys attached to an iron bar, were placed in a section of four inch pipe through which the liquor was transported from the liquor making department to the digester storage tanks. Here again the alloys were subjected to a continuous washing action. In the green liquor, the alloys attached to an iron bar were placed in a section of pipe through which the green liquor was transported from the dissolving tank in the recovery room to the liquor making room. As in the case of the Badger evaporator and sulphate cooking liquor, the samples were again continuously washed by the green liquor and subjected to the action of NaOH, Na_2S, and Na_2CO_3. In the case of alkaline hot water, the alloys attached to an iron bar were placed directly on the bottom of the tank. Here the constant emptying and filling of the tank served to wash the alloys with a hot weak alkaline liquor. On exposure to bleach liquor, the samples were placed on the floor of a concrete storage tank. In this position, the samples were given a slight washing by means of the bleach liquor.

In each case, the above sets of samples were exposed to the action of the various corrosive liquids for periods of three months. At the expiration of each period all samples were removed, washed, cleaned, weighed and measured and visually examined for evidences of any apparent corrosive action. The total exposure was of nine months duration.

Results

Identification of alloys are listed in Table I, the essential nominal composition being given in each instance. The samples are arranged under two headings, ferrous and non-ferrous. Among the ferrous metals are found the regular 16-18 per cent chromium alloys, alloys containing 27-30 per cent chromium, the regular 18 per cent chromium 8 per cent nickel alloys with various percentages of carbon, both cast and sheet, annealed, welded, pickled. Additional groups of this division included regular 23 per cent chromium 11 per cent nickel alloys, 28 per cent chromium 10 per cent nickel alloys, and other chrome-nickel alloys containing extremely high percentages of either constituent alone, or with addition of molybdenum or tungsten. In the non-chromium ferrous group we find Monel Metal, and various cast irons. Brasses, bronzes, high copper alloys are included in the non-ferrous groups. In addition to the various alloys, a control sample of common cast iron and regular sheet steel was placed with each group of test samples. In this manner, a relationship was shown between the corrosion action of the various liquids on the different alloys and the regular cast iron and sheet steel ordinarily used in pulp and paper mill materials of construction.

Table II shows the numerical results for each alloy exposed to the mentioned mill liquors. All results were calculated to loss in grams per square inch per year. A general survey of Table II shows very erratic results among various samples of a given group, even when exposed to the same alkaline liquor. In a general way, it is quite apparent that the chrome and chrome-nickel alloys are much more resistant to the corrosive liquids than regular cast iron or sheet steel. The non-chromium ferrous metals, including various fabricated cast irons, Monel Metal, and copper-molybdenum alloys are greatly attacked by the various alkaline liquors. Toward the non-ferrous group of alloys including brasses, bronzes, and high copper alloys, the alkaline liquors are very corrosive, which is common knowledge in alkaline pulp manufacture.

Summary

With the advent of high chrome and chrome nickel alloys for materials of construction in pulp manufacture by the various processes, the producer is fortunate in at last securing an alloy to withstand the constant corrosive attack of the various alkaline liquors. This brief summary of the subjection of some alloys to alkaline pulping liquors seems to indicate in a more or less superficial manner the resistance of these alloys to different

TABLE II
CORROSION TESTS ON SOME ALLOYS

A. FERROUS-REGULAR 16-18% Cr.

Alloy No.	Loss in Grams per Square Inch per Year — Badger Evaporator	Sulphate Cooking Liquor	Sulphate Green Liquor	Bleach Liquor	Alkaline Hot Water
7	.0034	.0091	.0109	.0754	.0052
14	.0012	.0069	.0400	.3145	.0069
44	.0010	.0062	.0320	.0199	.0013
		REGULAR 18-8			
38	.0000	.0031	.0077	.0858	.0000
39	.0092	.0045	.0038	.1635	.0442
40	.0000	.0046	.0075	.0000	.0000
49	.0000	.0000	.0076	.0000	.0000
50	.0000	.0000	.0000	.0107	.0000
52	.0057	.0120	.0250	.0000	.0000
1	.0043	.0076	.0085	.0213	.0000
2	.0000	.0051	.0000	.0244	.0105
4	.0077	.0103	.0110	.0237	.0169
9	.0064	.0115	.0035	.1106	.1130
13	.0044	.0026	.0081	.0000	.0013
30	.0100	.0022	.0062	.0033	.0000
17	.0035	....	....	.0699	....
		REGULAR 23-11			
3	.0132	.0230	.013	.0085	.0211
41	.0000	.0017	.0930	.0000	.0158
42	.0052	.0195	.0190	.1260	.0000
43	.0000	.0029	.0046	.0000	.0000
		REGULAR 28-10			
36	.0000	.0065	.0230	.0000	....
61	.0000	.0000	.0170	.0181	.0000
		OTHER Cr-Ni ALLOYS			
48	.0160	.0043	.0210	.0000	.0062
53	.0000	.0075	.0012	.0000	.0000
35	.0000	.0000	.0000	.0143	.0000
67	.0300	....	....	....	....
56	.0665	.0100	.0000	.0000	.0000
20	.0510	....	....	....	....
16	.0000	.0000	.0000	.0290	.1440
		NON-CHROMIUM FERROUS METALS			
5	1.180	.0026	.0011	.2161	.3560
22	2.974	1.130	1.570	5.7400	5.6700
24	5.638	.290	2.181	2.5511	.8000
29	15.0000	.614	....	.0055	....
33	3.120	1.416	1.041	7.3350	3.045
37	26.806	....	....	....	....
47	29.244	1.300	7.315	7.0010	1.4722
54	1.441	....	....	1.4360	....
55	.0271	....	....	2.1690	....
66	.1838	....	....	....	....
		B. NON-FERROUS ALLOYS			
21	.0000	....	....	.1895	....
23	6.511	.112	.336	.0293	.8220
25	2.816	.0441	.0835	.0847	.2880
26	.1790	.0115	.0130	.0525	.1440
45	14.265	11.266	10.376	.1003	2.9519
46	12.730	3.416	9.875	.0157	.6210
58	20.481	.791	7.346	.0000	1.3740
		C. COMMON CAST IRON CONTROL			
60	4.680	.383	2.158	3.9033	.8775
		D. COMMON SHEET STEEL CONTROL			
68	3.985	1.021	1.634	5.648	1.1143

service conditions in comparison with the resistance offered by the regular cast iron and steel, and also brasses and bronzes. In the acid sulphite process chrome-nickel alloys are finding extensive use as blow pit drainers, circulating lines and heaters, digester blow lines, pumps, valves and fittings. In the alkaline processes, chrome and chrome nickel alloys would find very extensive use in pumps, valves, fittings, facing wire, evaporators, liquor lines, and numerous other instances.

This brief test has been carried out under actual service conditions so that a better understanding could be secured of the resistance of these alloys. Obviously, the ideal manner to test the corrosive action of various liquids on materials of construction is to secure a fabricated pipe, valve, pump, and so forth, and give it actual service. Such procedure cannot be always followed, and certainly the cost prohibits such researches. It is then hoped that the action of these particular samples is indicative of the action of materials that might be fabricated from these alloys.

Continuous Batch Beating*

By C. W. Morden[1]

Continuous batch beating is the name applied to the method employed in the new vertical type beater known as the Stock Maker. It is the purpose of this paper to first describe this machine and its operation and to comment on some of the distinctive features of this new beating method and finally to refer to some of the results obtained by mills using it.

Description

The Morden Stock-Maker is an automatic vertical type machine which beats paper stock or hydrates pulp under pressure. Fig. 1 shows its appearance. As seen in this, the vertical motor and the treating unit below it form the main body of the machine. At the right are the accumulator tank and the electrical unit and valve which control the automatic introduction of raw stock and the discharge of beaten stock.

The internal arrangement of the machine's treating unit and the course the stock travels in it are shown in Fig. 2. The stock treating elements consist of a conical shape rotor somewhat similar to a jordan plug, and a bed plate shell surrounding it. This bed plate shell can be moved up and down by an adjusting mechanism at the base of the machine, thereby varying the degree of treatment given the stock. Outside of this bed plate shell is another conical shape shell, separated from it by a space which forms an annular passageway through which the stock is recirculated as it is being treated. This passageway also serves as a displacement chamber from which the treated stock is displaced by the incoming batch of raw stock when the valve in the outlet at the bottom of the treating unit is opened. The impeller above the rotor is used to draw in the raw stock from the accumulator tank, at the same time forcing out that which has been treated. This impeller also maintains the hydrostatic pressure in the machine. The circulation of the stock during its period of treatment is brought about by the pumping action of the conical rotor.

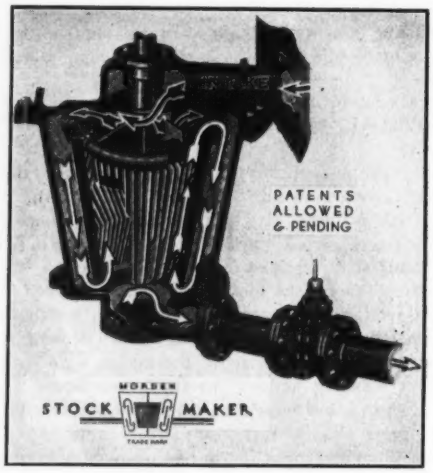

FIG. 2
Treating unit

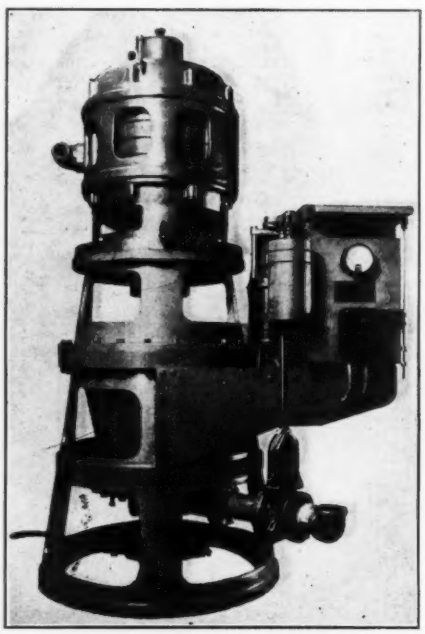

FIG. 1
Morden "Stock-Maker"

Beating Method

The Stock-Maker operates on a continuous batch principle wherein the stock is drawn off in small batches from a continuous supply and introduced under pressure into a recirculating type beating cycle in which the beating is done under high hydrostatic pressure. Upon completion of the beating of one batch, another is automatically introduced, displaces its equivalent volume of beaten stock, and is in turn recirculated and beaten under pressure until subsequently displaced by the next incoming batch.

A batch consists of about 5 cubic feet of slush stock, containing usually, from 10 to 12 pounds of air dry fiber. The exact quantity per batch is regulated by the setting of the controls on the accumulator tank. The time of treatment for

* To be presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 15-18, 1932. Written discussion of this paper is welcome and should be sent to R. G. Macdonald, 370 Lexington Ave., New York, N. Y

Contribution of the TAPPI heat and power committee.

[1] Member TAPPI, president, Morden Machines Company, Portland, Ore.

each batch is controlled, very simply, by regulating the rate of flow of stock into the accumulator tank. This is done by means of a stuff box and gate which are incorporated in the tank. The time of treatment ranges from as little as 15 seconds up to say, 35 seconds, or more, depending on the quality of stock handled and the type of beating done.

Distinctive Features

The use of this system, wherein small batches of a few pounds are beaten in a matter of seconds, produces what in reality is a continuous operation. This very desirable result is accomplished in the Stock-Maker moreover, without sacrificing the recognized advantages of batch beating such as recirculation and positive control of the time and degree of treatment, which combine to make possible a flexibility of treatment that can be readily adapted to bring out the best qualities of stock, no matter what its beating requirements may be. Automatic continuous batch beating, however avoids the objectionable features of ordinary batch beating as for example, it eliminates the long time element required to complete the treatment of a batch. In addition it provides a more uniform and more efficient recirculation of the stock during treatment, and eliminates the unavoidable variations that occur from one batch to the next when beating is done in the customary way.

These elements of flexibility and uniformity of treatment, ready and positive control and quick responsiveness to changes in control, are reflected directly in the paper machine's operation, usually by decided improvement and greater uniformity of the paper quality and by increased production due to steadier, safer running and also in some cases to higher paper machine speeds.

Continuous batch beating furthermore offers the attractive possibility of a type of stock treatment which may be termed proportioned continuous beating. In this type of beating, wherein several Stock-Maker units would be used, various proportions of the total furnish are separately and differently treated in the several units and then blended continuously in the beater chest or machine chest, to form a composite furnish. This proportioned continuous beating method has been shown to have very interesting possibilities. It is apparent that flexible, readily and positively controllable continuous type beating units are required to carry out this type of treatment.

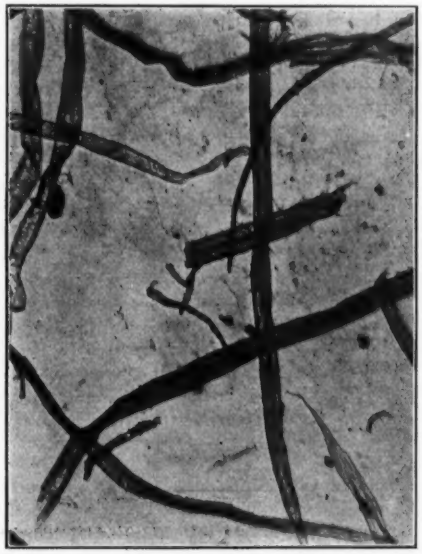

FIG. 3
Mitscherlich sulphite fibers before "Stock-Maker" treatment

FIG. 4
Mitscherlich sulphite fibers after "Stock-Maker" treatment

Pretreatment of Pulp

So far, continuous batch beating has been discussed in its relation to stock preparation directly ahead of the paper machine. What has been said in this connection obviously applies to the adaptability of this method to pulp treatment at any point in the mill as for example, where it is desired to pre-treat pulp ahead of beaters or to treat various kinds of pulp separately before combining them in a machine furnish.

Floor Space and Capacity

Saving in floor space is another distinctive feature of the stock-maker. Since it is a vertical, direct connected unit, heavy and expensive drives are eliminated and the floor space occupied (4½ x 6 ft) is approximately 1/10 of that required by the ordinary beater.

The machine is built in a standard size having a daily capacity up to twenty-five tons, depending on the nature of the stock and amount of work to be done on it.

Beating Action

In a discussion of the distinctive features of the Stock-Maker type beating the question may well be asked as to what is the nature of its action on the pulp fibers. Since the beating unit looks something like a jordan, I anticipate the question: doesn't it cut the fibers? It does not, no more at most than does the ordinary beater.

That you may have some visual evidence of this, two photomicrographs are included with this paper. Figs. 3 and 4 show respectively Mitscherlich sulphite fibers before and after the Stock-Maker treatment. They show the beating action obtained with a power input corresponding to approximately 6½ horsepower per ton per 24 hours. This power usage based on the Stock-Maker practice, indicates a hard beating pulp.

That you may have some further indication measured in terms of mill results to the effect that the Stock-Maker action is a beating and not a cutting action an instance may be cited of one mill where, with the use of this machine the tensile strength of a well soaked wet sheet of their paper was 25 per cent higher than that of a similarly tested sheet of their paper for which the stock was prepared entirely in jordans.

Why does this machine give this excellent beating action? There are many answers. The special design and arrangement

of the filling and other parts of the machine, beating under pressure, the type of circulation employed all contribute to produce the result. But here we are approaching the question. What is beating? This I shall not attempt to answer.

Mill Results

The technical and commercial development of this new beating method have required several years, but have been carried on quietly and along conservative lines, so many of you may now be hearing of it for the first time. It may be of interest to state that this method has been in regular mill operation for well over a year on the Pacific Coast.

The first installation replaced regular beating equipment and the next was a complete installation for a three machine mill where jordans were previously exclusively used for preparing stock. These installations put the Stock-Maker, early in its commercial life, into mill service where the beating methods superseded by it are the two that are most generally used. In both instances the Stock-Maker equipment was purchased by the mills, only after it had demonstrated that its beating treatment would produce better paper and do it with less power than would the older methods.

This power saving, conservatively stated, is between 20 and 30 per cent as compared with the total power previously used in stock preparation. In a general statement such as the foregoing it must be kept in mind that the actual power saving will vary considerably depending on the grade of paper being run, the type of pulp being treated, and the way in which the treatment is distributed between the units of equipment available for giving it. In this last statement we have reference to the jordan and in some cases to a regular beater when these are used in connection with the Stock-Maker. To make this point a little clearer it may be said that a jordan is always recommended to be installed between a Stock-Maker and the paper machine to provide a means for shortening the stock. A regular type beater is normally only used with the Stock-Maker where it is necessary to use the beater for breaking laps and broke when other equipment is not available for this purpose. With certain types of stock it has been found unnecessary to operate the jordan when the Stock-Maker is used, but this is the exception and our recommendation in all cases would be to have a jordan between the Stock-Maker and the paper machine. The 20 to 30 per cent power saving mentioned above applies to the two particular mills referred to. In other cases on certain grades the power saving with this machine treatment has run as high as 50 per cent.

Pulps Treated

The Stock-Maker has been used in preparing stock from sulphite, sulphate and soda pulp. The sulphite pulps have included domestic and foreign pulps, quick cook and Mitscherlich and the domestic sulphite pulps have included both West Coast and Eastern hemlock sulphites. Eastern and western sulphate pulps have both been run. In the case of soda pulp only West Coast pulp has so far been used.

The results of Stock-Maker treatment on these various pulps and the variations in treatment that they require has been an interesting study and one that is by no means completed. Where reference is made to running these various pulps what is referred to is actual mill running under regular operating conditions.

The services of the technical departments of the mills where Stock-Maker units are installed and the help and co-operation of the mills operating organizations have been of the greatest value in helping us analyze and check the results obtained. To these departments and the mills they represent we wish here to express our sincere appreciation.

To mention one or two particularly interesting examples of work with different pulps it may be of interest to refer to the results with easy beating, bleached, Eastern hemlock sulphite. In the treatment of this pulp with the Stock-Maker it has been possible to reduce the total power required 50 per cent as compared with that previously used when treating this with beaters and jordans in the regular manner. In round numbers the horse power previously used was ten horse power per ton per twenty-four hours. With the Stock-Maker treatment this was reduced to five horse power per ton.

Another instance, illustrating the flexibility of treatment obtainable with the Stock-Maker showed up early in its mill operation in a plant that was buying all of its pulp and buying from various sources. This plant found that with Stock-Maker treatment they were able to obtain satisfactory results with pulps which they had not previously been able to use. Some of the best paper made with the Stock-Maker for example was made from a hard treating sulphite which was too hard beating for them to handle with their original beating facilities. The situation also had its favorable economic aspect in that in some cases they were able to shift to less expensive pulps and still hold their paper quality.

Another and final instance along this line is one where with Stock-Maker treatment an excellent sheet of paper was made with a 100 per cent Douglas fir pulp where previously this could not be done.

Results of Treatment

Stock-Maker treatment in its effect of increasing the mullen strength of pulp handsheets has been studied for different pulps. In one case the strength increase coincided with the maximum obtainable with laboratory beater treatment. This has varied with different pulps from 100 per cent down to minimums for easy beating bleached Eastern hemlock sulphite where the increase has averaged possibly from 20 to 30 per cent. Its effect on stock freeness has also been studied for various pulps. The freeness tester chiefly used in this work has been a Williams stop watch type tester. The curves with this instrument show a sharp rise both for increasing the time of treatment with constant power and increased power with constant time. Many microscopic studies have confirmed the mill results indicating excellent beating action with minimum shortening of fibers.

Interesting results of Stock-Maker treatment where jordans have previously been used exclusively reflect the difference in action of the two types of machines. The sheet being run had to have good strength, finish and printing quality, all implying a well closed sheet. With jordan treatment this was obtained by hard treatment and with a considerable degree of cutting of the fibers. This cutting action was contributing largely to the close formation of the sheet. With a combined Stock-Maker and jordan treatment only one jordan was run where two had previously been used and this one only for what little cutting was desired. The result was a longer fibered sheet produced with 20 to 30 per cent less power for stock treatment. This sheet on the wire was a freer sheet that permitted 5 to 10 per cent higher machine speed than the former sheet but in spite of this due to its properly beaten long fibered makeup the sheet was of greater strength than the old sheet and had better finish and at least equal printing quality.

For the best results with Stock-Maker treatment the consistency of the stock should be uniform. Consistency regulators used directly ahead of Stock-Maker units have been used to give the desired consistency control and being so located have proven useful when for any reason it is desired to change the consistency of the stock being treated.

Papers Made

The papers made with Stock-Maker treatment include kraft and sulphite wrapping, sulphite tissues in toilet and waxing grades, a wide range of Western soda printing papers, including book, label and envelope, and specialties made from various sulphite and sulphate pulps.

Solids in Boiler Flue Gas—Cause, Result and Cure*

By J. C. Hardigg[1]

There has been considerable interest among the industries in the subject of boiler flue gas solids—cinders and fly ash—during recent years, and this interest is increasing every day. Results of surveys by engineers have been recorded and the following available information proves the importance of our interest.

The amount of ash thrown out of stacks in the United States is conservatively estimated as follows:

	Tons per Year
Bituminous coal burned (1928)	500,000,000
Average ash content at 10 per cent	50,000,000
Average amount of ash out of stacks at 20 per cent	10,000,000

It will thus be noted that there are approximately 30,000 tons of ash per day or 1,250 tons per hour of bituminous coal ash thrown out of chimneys and stacks in the United States.

The consumption of coal by classes of users (Bureau of Mines, 1928) is, roughly:

Railroads	28 per cent
Coke Ovens	16 per cent
Other Industries	36 per cent
Domestic and Miscellaneous	20 per cent
Total	100 per cent

The ash thrown out of stacks varies somewhat from case to case, but the above figures show in a general way the sources of cinders and fly ash.

Cause

The solids emitted from the stack are those entrained by the air or products of combustion passing into or through the furnace and carried through the entire path to the top of the stack. The quantity of solids and the particle sizes depend upon the gas velocities, the shape of the path of gas travel, the fuel, and the method of burning. It will be readily seen that high velocity air through a fuel bed will entrain more solids and larger particles than low velocity air; and, similarly, high velocity gas through a pulverized coal furnace will do the same. At the same time, the high velocity flow will carry the entrained solids farther along the path of flow.

The different mechanical and physical properties of the various coals make it practically impossible to predict the exact amount of solids that will be carried out of the stack in a definite installation. But experience shows that stoker-fired boilers produce typical cinders and fly ash and that pulverized coal-fired boilers produce dust peculiar to them.

Picturing to oneself these solid particles is made difficult by their extreme fineness. Additional difficulty lies in the two systems of measuring units used, screen or sieve mesh and the micron, neither of which is related directly to the familiar unit of the inch.

The screen or sieve mesh is expressed in the number of strands per inch of the screen. The 50 mesh screen is the one with the coarsest mesh ordinarily used in this work. The maximum diameter of the particle which will pass through the 50 mesh screen is approximately 1/100 inch. The screen of smallest openings made is the 325 mesh; the largest diameter which will pass through this screen is about 2/1000 inch. Generally, the microscope is used to determine the diameter of particles which pass through the 325 mesh screen.

The unit of measure in this work with the extremely small particles is the micron. One micron is 1/1000 of a millimeter, or 1/25,400 part of an inch—approximately 1/25,000 inch. The smallest of the particles from boiler furnaces is of the order of 5 microns or less.

A convenient method of picturing extremely fine particles is to compare their projected area to some familiar area—say the area of a circle 1/16 inch in diameter, or the head of the ordinary pin. The area of a 1/16 inch diameter circle is equivalent to the projected area of approximately 100,000 particles of 5 microns diameter. Whereas, the area of the same circle is equivalent to the projected area of 45 particles of 50 mesh—or 1/100 inch diameter. Hence, we are considering a range in sizes of from 45 to 100,000 particles to the head of the pin.

The amount of solids from a stack is reckoned in the minds of engineers in three ways: as a percentage of the coal burned; as a percentage of the total unburned material—ash and combustible in ash; and the loading or concentration of solids in grains per cubic foot of flue gas. These methods can be translated from one into the other. The number of grains per cubic foot, known as the loading, is ordinarily used to determine the efficiency of a collector. The efficiency is expressed by the difference between the number of grains going into and coming out of the collector.

The range in the amount of the solids thrown out of a stack is from 1½ to 8 per cent of the coal burned. There are installations that fall outside this range at both ends.

As a general rule, the solids from a stoker-fired boiler are in the range of from 1½ to 3 per cent of the coal burned. In many cases the particle sizes are of two distinct groups; the larger portion of the solids falls into the coarse group which contains particles down to around 200 mesh or 3/1,000 inch diameter; the other group—a small portion of the solids—is very fine. There are few if any particles of the intermediate sizes.

The solids from the pulverized coal-fired boiler are in the range of from 6 to 8 per cent of the coal burned. The particle sizes show no gap in their range. Generally, about 50 per cent of the particles pass through a 325 mesh screen. The absolute sizes of the particles from different analyses vary, principally, perhaps, due to the difference in the coal, fineness of pulverization before firing, and the furnace.

Great care must be exercised in sampling because, as the name implies, a sample is only a very small portion and an error of one in the sample assumes a formidable proportion when multiplied to make the whole. Information on the subject of sampling can be obtained from the Pure Air Committee of the American Society of Mechanical Engineers, a clearing house for technical problems and information in removing dust and other matter from the air.

Result

The pulp, paper and printing industries, according to the compilation above, burn 2 per cent of the bituminous coal, or 10,000,000 tons annually. The reckoning of economic loss or damage due to the ash in this coal, is difficult, to say the least. Ten million tons of coal are equivalent to a production of at least 10,000,000 tons of paper and boards. Ten million tons at $50 per ton, as an average assumed price, is $500,000,000. Putting the known value of damage at a low estimate of 2 per cent is $10,000,000 a year.

The damage it does depends upon where the ash settles. A plant located in a thickly populated district may cause damage to the

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Contribution of the TAPPI Heat and Power Committee.

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products of others and may have its products damaged by the ash of others. Whereas, the isolated plant may damage only its own production.

Travel of Dust Particles

The velocity of fall through still air at 70 deg. F. of pulverized coal, of specific gravity 1.2, of a particle 0.01 inch in diameter has been determined to be approximately 8 feet per second; that of a particle .002 inch in diameter, ¼ foot per second. The 0.01 inch diameter particle issuing from a stack 125 feet above the ground into a wind having a velocity of 60 miles an hour would drop to the ground at a point about ¼ of a mile away from the base of the stack, assuming there are no eddy currents, that the particle starts to fall immediately upon its arriving at the 125 foot elevation, and that it immediately moves at 60 miles per hour horizontally. The .002 inch diameter particle under the same conditions would travel several miles from the stack. These two sizes of particles are about 60 mesh and 300 mesh.

There are many factors that affect the travel of the particles coming from a stack, such as size of particle and its density, the temperature, velocity, and composition of the surrounding gas or air, etc. Meteorological conditions also play an important part. The atmospheric condition known to aviators as a low "ceiling" and an inverse temperature gradient followed by fog, deposits even the fine particles in the immediate vicinity of the stack. This condition and its fog are caused on clear days by the earth's loss of heat by radiation when cut off from the sun's rays, with a consequent cooling of the atmosphere from 300 to 500 feet up; while the air above retains its sun-heated temperature.

Flue gases containing color can be observed to rise to the height of the "ceiling" and then flatten out or roll, as though in contact with a solid surface. The cooling off of the air below the "ceiling" condenses some of the atmosphere's moisture content into fog droplets on the ash particles as nuclei. The fog of water and ash descends to the ground and enters the mill's air supply. At the same time, it also settles on to the materials stored outside at the plant.

The above conditions represent the two extremes but there are forces between which demand almost equal consideration. Each plant has its own peculiar conditions which require first hand study.

Industrial Dust Problems

An ailment before it can be cured must be correctly diagnosed, and so it is with the solution of a dust problem. When the problem is once defined, the proper remedy can be applied.

One manufacturer of a waterproof material found that foreign particles larger than 250 mesh, when lodged in his product, made it leak. Another manufacturer determined that, due to the location of his plant, any appreciable amount of dust from his stack would create a nuisance in the neighborhood.

At a plant where the supply of raw materials is kept in the open and the finished product must be free of dust particles, the problem is, perhaps, somewhat different. After the dust size doing the damage has been determined and if its source has been located in the boiler house stack, we are ready for the remedy. Its choice depends upon the individual needs of the plant: the perfection demanded of the finished product, the amount of money that can be spent, and the requirements of the locality in which the plant is situated.

A large stoker-fired power station was notified that the cinders from its stack were a nuisance to the neighborhood, and that they would have to stop the nuisance. After a time the engineers of the station found large amounts of cinders deposited in the flues. Shoveling out of these deposits and periodical cleaning of the flues has appreciably reduced the difficulty.

Observation from the air of swirls visible in a stack has been reported. That is to say, the velocity of flow is not uniform across the stack, with resulting swirls. This high velocity gas carries in it a large amount of solids. Often velocity measurements taken at a number of points in a cross-sectional plane through a flue or stack show rather wide differences of velocity in the same cross-section. Graphical representation of the velocities in a number of these cross-sections in the same stack many times will indicate presence of a swirl. One remedy is the use of honeycomb shaped baffles, against which the swirl projects itself and the gas is sent straight up the stack.

Cure

At times the source of the cinder nuisance may be traced to the draughting room, where the plant was laid out. To avoid interference with structural members of the building or with equipment, flues are sometimes angled or bent because, as someone aptly phrased it, "You can't bend a beam around a flue, but you can bend a flue around a beam." Such angles form obstructions to the free flow of gas and are ideal pockets for cinder deposits.

These preventive measures point to the fact that the constructional problems of the plant must be taken up first, and the engineer must make himself so dust conscious that he follows it through every possible source from the plant's original layout to the point where only installation of dust removing equipment is his final solution.

The selection of the dust removing equipment depends upon the solids to be removed, the space available, and the amount of money to be spent. A compilation of the developments in collectors up to 1929 has been done in masterly fashion by K. Toensfeldt (Transactions A.S.M.E. (Fuels and Steam Power) Vol. 50, Paper 59, 1928).

Progress in these machines since then has been concentrated upon refinement and higher efficiency of collection rather than novelty of design. Recent years have seen the employment of water in the collection of solids from boiler flue gas, and machines in operation have been very successfully developed beyond the experimental stage.

It is safe to say that within the available wide range of dust collectors the engineer will find the one best suited to the individual needs of his plant.

The disposition of the ash caught in the form of fine particles has been a major problem in this work. This ash is now being used in some tonnage for an inert filler, as in asphalt, asphalt products, and rubber. The development of a number of other uses is being watched with interest. Those working on this disposal see in the future a demand created for the supply.

As in all pioneering, there are difficulties to be surmounted. In this instance, the obstacles are the cost of transportation and the creation of satisfactorily large markets. But in the minds of those most deeply interested in the problem and most actively engaged in its solution, there is already the cheering picture of a damaging waste material turned into a profitable by-product.

Effect of Unbleached Sulphite Fibers on Stability of Papers

In tests made at the Bureau of Standards, Washington, D. C., it was found that unbleached sulphite fibers of the grade used in news print paper, seriously affected the stability of writing paper containing them. A series of rosin-sized writing papers was made in the bureau paper mill using varying proportions of bleached and unbleached sulphite pulp, and the relative stability of the papers was measured by heating them and finding the loss in strength. As is illustrated by the following figures for retention of folding endurance under the heat test, the stability of the papers decreased markedly with increase in amount of unbleached sulphite:

Paper No.	Unbleached Sulphite Per cent	Bleached Sulphite Per cent	Retention of folding endurance Per cent
1	0	100	37
2	25	75	19
3	50	50	2
4	75	25	1

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Depreciation of Appraised Values

Depreciation Factors—Use of Cost Basis in Calculating Depreciation Contrasted with Replacement-Value Basis

By Walter A. Staub*

Depreciation has been defined as "a decline in the value of property such as may reasonably be expected to occur as a result of wear and tear and gradual obsolescence."[1] The same authority further states, "it is due to the possession and use of assets, and therefore is a part of the cost of operation."

Depreciation Factors

Broadly speaking, the determination of periodical depreciation allowances involves three major factors: (1) the capital amount to be extinguished or recouped, (2) the probable useful life expressed in a period of time or in quantity of production units, and (3) the rate of depreciation expressed in percentage or unit value. The third factor is ordinarily derived from the first and second but it is named as a separate factor because in practise when once determined it is likely to continue unchanged for a considerable period of time, and the periodical depreciation allowance is determined by the application of the third factor to the base or to the production during the period.

In discussing the subject of this paper I shall consider only the factor of the basic value to be used in determining depreciation allowances chargeable to current operations and the disposition of the difference, if any, between (a) the periodical allowances, required to extinguish appraised values during the life of the property to which they apply and (b) the periodical allowances computed on the basis of the cost of such property. The factors of expected life and depreciation rates would not ordinarily present any problem of principle whether the depreciation base be cost or an appraised value differing therefrom. Also, I shall not discuss the special problems which relate to the allowances for depletion of natural resources.

The suggestion of using any other base than property cost for determining depreciation allowances would hardly arise excepting when a marked change in the price level has taken place. Prior to the World War serious consideration was not ordinarily given to any other depreciation base for accounting purposes than cost. Apart from land (a non-depreciable asset) and mines, oil wells, and timber (the value of which is affected by discovery of natural resources and modification of their accessibility), any marked difference between an appraisal and the relative depreciated cost per books would not have been due in any substantial degree to change in the price level, but to such factors as difference between the cumulative depreciation allowances set up on the books and the observed depreciation allowed for in the appraisal, failure to capitalize expenditures for the extension or improvement of the property, and the like. In large measure, therefore, adjustment of the book value of the property would represent in substance the correction or modification of earlier entries for depreciation, capital expenditures, etc., an adjustment which (excepting for appreciation of land or natural resources) might properly be made through the earned surplus account. The adjusted book value, thus brought into agreement with the appraisal, would be a proper base for subsequent depreciation allowances chargeable to cost of operation.

The greatly changed price level and wage rates during the war, which were maintained for at least a decade thereafter, brought about a situation in which the appraisal of almost any manufacturing plant or public utility constructed partly or wholly before the war would be considerably in excess of the original cost, less depreciation allowances for the intervening period of service. The great amount of financing done by industrial corporations after the war led bankers to stress the increased values of plants as determined by appraisal about the time of offering the securities to the public. Occasionally, business concerns, even though closely held and not offering their securities to the public but perhaps borrowing from the banks, felt impelled to show on their balance sheets the present value of their fixed assets rather than their value based on original cost.

In some cases the increment in value was shown only on the financial statements or in the text of bankers' prospectuses, the book values remaining unchanged. In many cases, however, effect was given in the books to the appraised values. It was recognized that the best accounting practise required that the credit arising from the revaluation be placed in a special surplus or reserve account and not included in earned surplus. The question still remained, however, how subsequent depreciation allowances were to be dealt with in the accounts. Where the corporation continued unchanged and no securities had been

* American accountant.

[1] Montgomery's Income Tax Procedure, 1927, edition, page 941.

issued against the increment in value, the dollar investment in the property which needed to be recouped through operations in order to maintain the corporation's capital intact remained the same and there had merely been recorded an estimate of present value, usually the depreciated cost if reproduced under present day conditions.

Influence of Income Tax Laws

The theory has also been advanced in recent years that depreciation allowances chargeable to operations should provide not merely for recouping the cost of the property during its useful life but for its eventual replacement in kind. Inasmuch as the cost which would obtain at time of replacement can not be foreseen, the thought was advanced that the base should be current replacement cost rather than original cost.

The federal income and excess profits tax laws, with their requirements for the computation of depreciation on bases other than original cost, e.g. value at March 1, 1913, and for the determination of realized appreciation for invested capital purposes, have also had an influence in raising the question of what is the depreciation base which should be currently, used and how depreciation allowances computed on a basis of value other than cost should be dealt with in the accounts, i.e., should they be charged into or against current operations, or only in part against current operations and in part against revaluation surplus or reserve.

Adjustment of Book Cost to Appraised Value

Let us now consider the case of a corporation which has an engineering appraisal made of its plant, machinery and equipment on the basis of replacement cost less accrued depreciation. The assets have been carried on the books at cost, with a reserve for depreciation. The appraised valuation is in excess of such depreciated cost, and it will be assumed that the excess is due to appreciation in values or decline in the value of the dollar and not to the setting up of excessive depreciation allowances on the corporation's books or to the charging of capital items to expense.

The assets are written up to the appraised value, and the excess of the appraised value over the book value is credited to an account called, say, "Surplus resulting from revaluation of properties", or, for short, "Revaluation surplus." Should manufacturing cost thereafter be charged with depreciation on the original cost of the properties or with depreciation on the appraised values?

Cost or Replacement Value as Depreciation Base?

It will be of interest to discuss first the general question of whether depreciation should be based upon cost or replacement values. This has been a subject of considerable controversy and, as in the case of all controversial questions, strong arguments can be advanced for either position.

Arguments for Cost

The following arguments have been, or may be, advanced in favor of charging operations only with depreciation on original cost:

1—The cost of production can mean only the actual cost of production. The fact that it may be impossible to replace the productive facilities at their original purchase price has no bearing on the cost of the goods produced during the current period and can affect only the cost of goods produced in the future after the new facilities are required.

2—An engineering appraisal is ordinarily but an estimate by the appraiser of the replacement cost at the date of the appraisal. Even if it should accurately reflect the current replacement cost, it is impossible to predict what the replacement cost will be in ten, twenty, or more years when it becomes necessary to replace the property.

3—Books of account (and the accounting statements prepared therefrom) are historical records. In computing depreciation the one historical fact we have is cost. When we depart from cost, we are entering the realm of conjecture and, if it be consistently attempted to base depreciation on replacement cost, the result must be widely fluctuating depreciation charges, which distort profits and comparative costs of different periods.

4—When some companies in an industry have old plants and other companies have modern plants, the companies with the old plants should have the benefit of the lower depreciation charges to offset the increased efficiency of the modern plants. Otherwise the older plants are handicapped in competition, assuming that production cost determine selling prices.

5—The fixing of selling prices is a function of management, and, if it be deemed advisable to recoup in the selling price the difference between the cost of productive facilities and their replacement cost, selling prices may be so fixed, but this policy has no bearing on the depreciation account. Financing the replacement of assets is a problem of management, not of accounting.

6—Machinery and equipment are ordinarily replaced gradually and in a rising price period the depreciation based on cost will gradually increase even though depreciation is not computed on replacement values.

7—Since such rapid progress is being made in the development of productive processes, it is practically certain that when it becomes necessary to replace a plant item it will not be replaced with an exact duplicate but with an improved type. One new machine may be installed to do the work of three machines which have been discarded. A new plant better designed may produce more than a larger plant inefficiently designed. Consequently, there is no necessary relation between the replacement cost of an existing asset and the amount which will actually be expended for its eventual replacement.

8—Any provision which the management believes should be made for excess cost of replacements should be made by appropriating earnings in a reserve or by retaining adequate surplus. The problem is not different in principle from that arising with respect to the larger investment in inventories required in a period of rapidly rising prices. Unless new capital is introduced, profits must be retained in the business to furnish the needed working capital.

9—Charging manufacturing costs with depreciation on appreciated values is unfair to the consumer. If the eventual replacement cost is less than the current replacement cost, the business has benefited at his expense. If it is greater, the future consumer has benefited at his expense. In any event he is insuring business against price fluctuations without any adequate consideration.

10—If interest is not to be considered a part of manufacturing cost (and this seems to be the consensus among accountants) though it may be an influence in determining selling prices, depreciation on appreciation is not a part of such cost, though both must be considered by the management.

11—If manufacturing costs inclusive of depreciation on appreciation are used for inventory purposes, the inventories will be overstated.

12—In many industries selling prices are determined by forces entirely beyond the control of the individual man-

agement and there is accordingly no advantage in charging manufacturing costs with depreciation on replacement costs of plant.

13—Inventories are carried at cost or market whichever is lower and charged to cost of sales at such valuation, even though they have appreciated in value. Why then charge costs with appreciation in plant values? The inventories must be replaced much sooner than the plant.

Arguments for Replacement Value

The arguments for charging operations with depreciation on replacement costs may be briefly stated as follows:

1—The function of depreciation is to assist in maintaining capital not in merely stating historical facts.

2—Where a company has old plants and new plants it is necessary to charge manufacturing cost with depreciation on appreciation in order to have all plants on a comparable basis.

3—In the interest of an industry as a whole, since different concerns will have acquired plants at varying costs, depreciation should be charged on a uniform basis to avoid damaging competition and permit a reasonable profit to all properly conducted businesses in the industry.

4—Whereas the determination of selling prices is a function of management, management is entitled to all the assistance that accounting can render, and the inclusion in manufacturing costs of depreciation on appreciation is a distinct aid to management in determining sale prices.

5—The preservation of capital is not merely a matter of preserving the dollars invested in the business. When these dollars have been used to acquire productive facilities the preservation of capital requires the preservation of these facilities. When the replacement cost of these facilities increases, in order to preserve capital this increase should be recovered in the cost of product.

6—Even though replacement cost may subsequently decline, if a business is fortunate enough in a time of high prices to have plant facilities acquired at low prices, the business and not the customer should benefit.

7—When prices are rising and the value of the dollar is declining, gross earnings may increase rapidly. At the same time productive facilities are being consumed which may have to be replaced with the dollars of diminished value.

If the dollars necessary to replace the facilities are not recovered, through costs and segregated in a special surplus or reserve account, excessive dividends may be paid out of increased dollar earnings, part of which do not represent actual earnings if measured by the purchasing power of the dollars received.

In other words, if a workman received an increase in wages and the cost of living increases correspondingly, he has no increase in REAL wages. Correspondingly, if a manufacturer receives increased selling prices, and the replacement cost of the facilities consumed increases correspondingly, he has no increase in REAL profit.

8—Appreciation is merely an accretion in the value of an asset and should be treated in the same manner as the original cost of the asset.

Interstate Commerce Commission's Position

The advocates of charging manufacturing cost with depreciation on replacement values, even though the appreciation is not taken up in the balance sheet, usually refer to the public utility field and the decision of the United States Supreme Court in the case of United Railways v. West, 280 U. S. 234, to the effect that for rate-making purposes depreciation should be based upon "present value". It is important to note that in spite of the decision in the United Railways case, the Interstate Commerce Commission in its recently published regulations regarding Depreciation Charges of Telephone Companies and Steam Railroad Companies (July 28, 1931), after exhaustive consideration of the alternative bases of cost and replacement value, *follows the general principle that for accounting purposes depreciation should be based upon original cost.*

The Commission points out, first, that the Supreme Court has never yet held that "present value" is wholly determined by replacement cost. In St. Louis & O'Fallon R. Co. v. U. S., 279 U. S. 461, 487, the court said:

"No doubt there are some, perhaps many railroads, the ultimate value of which should be placed far below the sum necessary for reproduction."

Secondly, the Commission states:

"It is not essential that the accounts should correspond in all respects with the facts which may be controlling in a confiscation case. In such a case, the fact with respect to property which is ascertained, is its fair value, but we know of no system of accounts which undertakes to disclose this fact with respect to physical property. On the contrary, such property is normally stated in the investment account at cost. In determining whether confiscation has been or will be accomplished, the court will make allowance for unnecessary or unjustifiable operating expenses, but all such expenditures must be shown in the accounts. Accounting is not an exact science but a practical art which has evolved through a gradual process of trial and error and the application of sound judgment to experience."

Procedure When Securities Are Based on Appraised Value

It is uniformly recognized that, when a reorganization has taken place, and a new corporate entity has come into existence, the properties being taken over at appraised value, operating costs must be charged with depreciation on such appraised value. Similarly, when a stock dividend is issued against the appreciated value and the appreciation becomes a part of the corporation's fixed capital, it is clear that the depreciation charged to operating costs must be based upon the appreciated value.

When a corporation revalues its assets and credits the appreciation to a revaluation surplus account and then sells securities on the basis of a balance sheet reflecting such appreciation, accounting opinion is not unanimous, but a strong argument can be made that in this case too, manufacturing cost should be charged with the entire depreciation computed on the written-up values. The new security holders have purchased an interest in the business on the basis of such present values and are entitled to have their capital preserved. If they are bondholders, they are entitled to have the appraised value of the assets recouped by an annual charge against income before dividends are paid to stockholders.*

Procedure When New Securities Not Involved

When a company does not issue a stock dividend or sell new securities but merely writes up the property accounts and credits revaluation surplus, present practise would probably sanction a charge to manufacturing cost with depreciation on the cost of the properties, a charge to the revaluation surplus account with depreciation on the appreciation, and a credit of the entire depreciation allowance to the depreciation reserve.

In some cases the practise is followed of charging manufacturing costs with the entire depreciation and then making a transfer from the revaluation surplus account to the income account or the earned surplus account for the depreciation on appreciation. This transfer represents the

* See Montgomery's Auditing Theory and Practice, 1927 ed., p. 686.

appreciation realized during the year. The effect is that earned surplus as a whole is charged only with depreciation on cost but manufacturing costs are charged with depreciation on what purports to be replacement value as at some date.

Inadvisability of Writing Up Property to Appraised Value

Most revaluations of property made in the past ten years were made because it was believed that we had reached a permanently increased price level and that the book values were entirely disproportionate to current property costs. It was felt that the course of prices would never again permit the replacement of property at the original costs and the balance sheet should properly be adjusted to the new era.

It now appears that the "new era" prices, even with respect to construction and equipment costs, may have been much less permanent than was supposed a few years ago. It is therefore much easier to realize now than a few years ago the impossibility of estimating future replacement costs or of determining the existence of a permanently increased price level.

With this experience in mind the wiser course would seem to be not to write the properties up on the balance sheet, but when it is desired to indicate the appraised value, to do so by a footnote or parenthetical statement. Depreciation should then be computed on cost. Any effect which the management wished to give to current replacement costs for the determination of sales policies and prices would be independent of the balance sheet and income statement.

Argument for Charging Operating Costs with Full Depreciation on Appraised Value

A balance sheet is more than a mere form. It is the directors' statement of the company's financial position and capital structure. When the directors authorize the revaluation of property and the crediting of the appreciation to a revaluation surplus account, they are performing a significant act, and when a balance sheet is issued giving effect to the adjustment there is a representation to the public that the net worth of the company has had a definite increase. If it is not believed that subsequent earnings will justify the increased depreciation charge the revaluation should not be made.

In general the value of industrial and public facilities depends on the earnings they will produce. If the earnings are not commensurate with the appraised value, the writing up of the book value is almost analogous to making capital expenditures, which will not be productive of any increase in the corporation's earnings. It can not be assumed by the public that the increase in net worth is only for the duration of the plant, the value of which has been written up on the corporation's books.

It seems immaterial that no securities are issued. Any time after the issuance of the balance sheet an investor may purchase securities from a previous holder on the basis of the balance sheet or at least be influenced by it.

Consequently, where there has been a creation of revaluation surplus, companies might well be encouraged to charge manufacturing costs with depreciation on the appreciated value, though as previously stated this is not as yet general practise.

If this practise is followed it seems illogical to make a transfer from revaluation surplus to income account or earned surplus account for the depreciation on appreciation. Operating costs will be charged with the entire depreciation on the theory that the appreciated value has become capital to be maintained out of earnings. If transfers are periodically made from revaluation surplus to earned surplus, such transfers would be available for dividends and, assuming they were all paid out, when the useful life of the property expired there would remain out of earnings for the replacement of the property only an amount representing its original cost. (See illustration at end of article.) This would be contrary to the purpose in charging costs with the depreciation on appreciation, since earnings can not be appropriated for replacement of property and also be available for dividends. It would be more logical to make a periodic transfer from the revaluation surplus to a replacement reserve.

Author States His Conclusions

In dealing with the subject of this paper, I have endeavored to present the various phases of a subject which has been of accounting importance, or at least has received serious consideration, only during the past decade. The accounting procedure which to me seems desirable under various circumstances, even though it has not yet in all the cases indicated become general practise, may be briefly summarized as follows:

1—Cost is the preferable base for computing depreciation allowances;

2—Replacement value is not a desirable base for computing depreciation allowances;

3—It is preferable that, excepting for particular reasons to the contrary, appraisal value be shown as memoranda on financial statements rather than be reflected in the accounts;

4—When incident to reorganization, or through a stock dividend, or otherwise, securities have been issued against appraised values, the full amount of depreciation based thereon should be charged to operating costs; the same rule should apply when securities are sold with appraised value as one of the representations;

5—If appraised value is used to create surplus on the books, it is in effect a representation of an increment in capital, and (even though securities have not been issued there against or sold on the strength thereof) it is preferable to charge depreciation allowances based thereon to operating costs in full rather than to charge operating costs with only depreciation based on plant cost and revaluation surplus with the depreciation on appreciation;

6—If it be argued that appraised value represents capital now actually employed in the business, and that operating costs should be charged with depreciation based on such values, then it is illogical to make periodic transfers from revaluation surplus to earned surplus; such transfers should rather be made to a replacement reserve.

Illustration of Result of Periodically Transferring Depreciation on Appreciation from Revaluation Surplus to Earned Surplus and Distributing Entire Earned Surplus

Assume a corporation with a plant which cost $300,000 represented by $300,000 of capital stock. The plant is appraised at $500,000 and $200,000 is credited to revaluation surplus account. During the life of the plant the corporation earns $700,000 before depreciation. Depreciation is computed on the appraisal values, but a periodic transfer of realized appreciation is made from revaluation surplus to earned surplus. All earned surplus is distributed in dividends.

The earned surplus may be analyzed as follows:

Earnings before depreciation		$700,000
LESS depreciation on appraised value		500,000
		200,000
Plus realized appreciation transferred from revaluation surplus		200,000
Total surplus distributed in dividends		$400,000

(Continued on page 45)

Program of Cost Department Meetings

The meetings of the Cost Department of the American Paper and Pulp Association, arranged by the Committee on Uniform Accounting and Cost Procedure, will be held in the Pennsylvania Hotel, New York, on Monday and Tuesday, February 15 and 16.

To Compare Accounting Procedure

At each session, progress reports will be distributed covering the subjects listed, and the meetings will principally be devoted to comparing the accounting procedure outlined, with the present practice (where differences exist) of the mills represented. It is not the intention to recommend entire uniformity of practice, but rather to so classify all expenses that there may be uniformity in their classification, and in the nature of the expenses charged to each account.

The distribution of the so-called fixed charges and indirect manufacturing expenses to the cost of the products manufactured, can be accomplished in several different ways. It is not the committee's desire to recommend any one special method to accomplish this distribution, but rather to emphasize to the mills that however accomplished, the result should be that all such expenses are finally included in the manufacturing costs.

Data Requested

It is suggested that mill representatives bring the following data to the meeting (no figures required): 1—A classification or chart of accounts. 2—Copies of forms of balance sheets and profit and loss statements in use. 3—A short write-up of the methods used to distribute fixed charges and indirect manufacturing expenses to the manufacturing costs. This suggestion is made in the belief that it will facilitate the comparison of methods used.

Cost Consciousness

The committee feels that it should emphasize the great importance of building up a bigger and better "cost consciousness" in the pulp and paper industry. It feels that it is essential that the industry shall realize the vital effect, that would result from a complete acceptance by the industry in general of the sound basic principle that if the industry is to operate on a sound economic basis, its products must be priced on a basis reflecting the true manufacturing costs. The condition now existing in this regard, is in many aspects, chaotic. Part of the trouble is undoubtedly due to the different conceptions existing in the mills, as to how costs should be compiled. This can be checked by reflecting on the many occasions when it has been expected that a profit would be shown at the end of a fiscal period, whereas a loss was finally shown, instead of a profit. The program of meetings follows:

Monday, February 15th

MORNING SESSIONS

9:00 A.M. Registration

10:00 A.M. Opening Address by James A. Reilly, assistant comptroller, American Writing Paper Company, Inc., chairman, Committee on Uniform Accounting and Cost Procedure.

Following the chairman's opening remarks, progress reports will be submitted to the meeting for discussion relating to:—

Classification of Accounts
- Group 1—Assets
- Group 2—Liabilities

Balance Sheet Preparation
Accounting for Fixed Assets
Accounting for Depreciation

AFTERNOON SESSIONS

2:00 P.M. Progress Reports will be submitted for discussion as follows:

Classification of Accounts
- Group 3—Indirect Manufacturing and Indirect Expense Accounts
- Group 4—Pulp Mill Operating Accounts
- Group 5—Paper Mill Operating Accounts

Distribution of Fixed Charges
Methods of distributing Indirect Manufacturing and Indirect Expense Accounts
Description of "flow" of accounting entries.

Tuesday, February 16th

MORNING SESSIONS
Parlor 1

9:30 A.M. Progress Reports:—

Classification of Accounts
- Group 6—Sales and Cost of Sales
- Group 7—Selling and Advertising Expenses
- Group 8—Administrative Expenses
- Group 9—Miscellaneous Income and Expenses

Preparation of Profit and Loss Statement.
Foyer Banquet Hall

12:30 P.M. Luncheon Meeting for Executives: Chairman, Jesse H. Neal, general manager, American Paper and Pulp Association

Speakers: Allen Abrams, Marathon Paper Mills Company, vice-president, Technical Association of the Pulp and Paper Industry, "Rational Manufacture"; J. A. C. Kavanagh, statistician, American Paper and Pulp Association, "Paper Possibilities"

AFTERNOON SESSIONS

2:30 P.M. "Payroll Distribution." Suggestions for correct distribution followed by a discussion of the different methods now used.

3:30 P.M. C. M. Baker, engineer, American Paper and Pulp Association, "Profit Leaks"
"Accounting for Materials Consumed"
"Measuring and Weighing Materials"
"Shrinkage and Waste"
"Broke"
"Perpetual Inventories of Raw Materials"

APPRAISED VALUES DEPRECIATION

(Continued from page 44)

The corporation has accordingly distributed $400,000 out of the earnings (before depreciation) of $700,000, leaving only $300,000 to replace the plant, representing its original cost.

The balance sheet would appear as follows:

Plant	$500,000	Reserve for Depreciation	$500,000
Other assets	300,000	Capital Stock	300,000
	$800,000		$800,000

It is true that the depreciation reserve equals the appraisal value of the plant but the appreciation of $200,000 recovered through costs has been distributed.

COST SECTION

Obituary

A. J. Lewthwaite

[FROM OUR REGULAR CORRESPONDENT]

PORTLAND, Ore., January 30, 1932.—A. J. Lewthwaite, 62, associated during his whole business career with the pulp and paper industry, died at his home in Portland, Ore., January 23, after an illness which lasted over a period of four years. Up until the time he was stricken he was with the Crown-Willamette Paper Company as executive vice-president for many years. He inherited his interest in the paper industry from his father, who was among the first paper mill owners in Oregon.

Mr. Lewthwaite is survived by his widow and two daughters, Harriet and Cornelia, who were in Washington, D. C., attending school but who returned to Portland January 26.

Mr. Lewthwaite was born in Oregon and with the exception of a few years spent in the east, he lived in his native state all his life. He was a member of the Masonic Lodge, Al Kader Shrine, Waverly Country Club, the Arlington Club, and the San Francisco Golf Club. He was also interested in many civic enterprises in Portland and was always active until overtaken by illness.

Both active and honorary pallbearers were friends in the Crown-Willamette Paper Company, or closely connected with the paper industry. Honorary pallbearers were George P. Berkey, R. L. Brackett, C. D. Brunn, C. C. Colt, Franklin T. Griffith, R. L. Herren, Alma D. Katz, W. D. McWaters, Cassius R. Peck, John H. Walker, O. L. Price, and F. O. Downing. Active pallbearers were: Albert Bankus, C. E. Bruner, J. R. Frum, L. R. Gault, J. E. Hanny and Emmett Rathbun.

Sutherland Paper Co. Changes

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, February 8, 1932—B. C. Dickinson, formerly president of the Standard Paper Company and treasurer of the Sutherland Paper Company, since the latter concern absorbed the Standard, retired as officer of the concern at the annual meeting. He remains on the board of directors. Dickinson is succeeded by Walter A. West, general office manager and auditor of the company.

Two changes were made in the company's directorate. The vacancy caused by the death of the late Fred M. Hodge was filled by the election of Earl H. Shepherd. J. E. J. Keane, of Detroit, was dropped from the board and Dr. L. H. S. DeWitt named in his place. Other directors, all re-elected are: L. W. Sutherland, F. W. Sutherland, O. F. Miller, W. L. Otis, F. B. Eilers, E. J. Chase, F. A. Appledoorn, L. M. Crockett, C. H. Farrell and W. J. Lawrence.

The officers in addition to West are: President L. W. Sutherland; vice president, O. F. Miller; secretary, F. W. Sutherland.

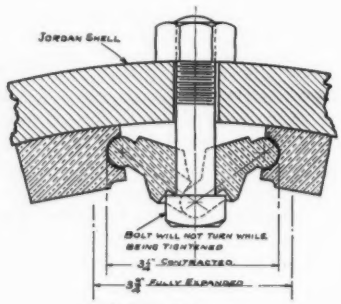
West Dudley Paper Co. Resumes

WEST DUDLEY, Mass., February 8, 1932.—The employees of the West Dudley Paper Company returned to work last week following an eight-day shut-down following a fire which partially destroyed the plant, January 24.

Repair of the mill's storeroom, gutted by the fire, has been started by the J. W. Bishop Company, building contractors, of Worcester and is to be completed before March 1.

New Jordan Shell Filling

The Hermann Manufacturing Company of Lancaster, Ohio, has developed a new type assembled jordan shell filling. According to information obtained on this new filling both the wooden wedge and anchor bar are supplanted by a bronze unit which automatically tightens and at the same time locks the filling to the jordan shell.



CROSS SECTION

The Hercules Self-Lock Filling affords several advantages, such as, ease and rapidity of installation, the ability to remove for clipping, and a most desirable feature of having the knives and wood spacers in the tightening process slip on the retaining rings so that the pressure is applied equally to each individual knife and wood throughout the entire circumference of the filling.

NEW TYPE JORDAN SHELL FILLING

Accompanying cuts show a section of the filling assembled and a sectional view of the bronze device. Patents are pending.

J. H. Quinn Goes With Utica Mill

[FROM OUR REGULAR CORRESPONDENT]

CARTHAGE, N. Y., February 8, 1932—James H. Quinn has resigned as general superintendent of the Carthage Pulp and Board Company and on February 1 assumed his new duties in a similar capacity with the Foster Box Board Company at Utica. He came to the local plant several years ago following its purchase by a Philadelphia company at a public sale. The mill was remodeled at that time and has operated steadily until a few weeks ago. Mr. Quinn has also served as vice president of the local company. He plans to move his family to Utica in the spring.

1864 1932

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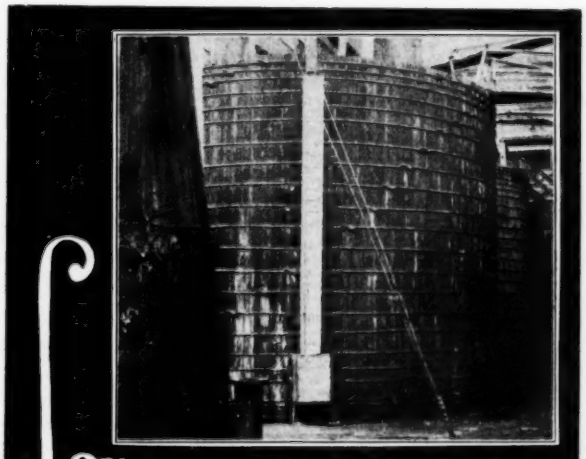

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Wood tanks for paper mills, stuff chests, acid storage tanks, blow pits, beater tubs, alum tanks, rubber-lined muriatic acid storage tanks made of Red Gulf Cypress.

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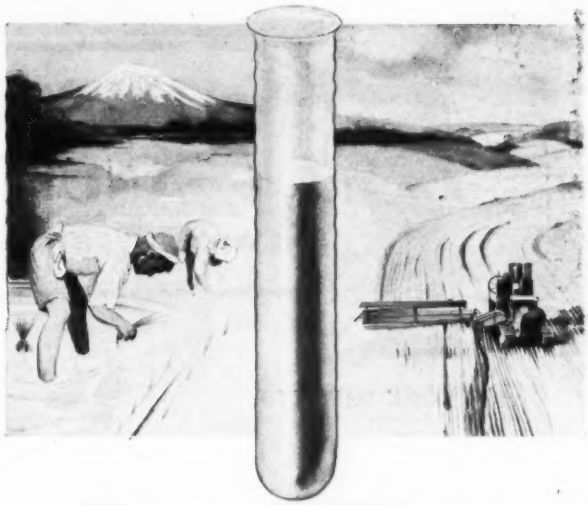
Cincinnati Ohio



East is East *and* West is West *but the Test Tube brings them Together*

Trade expansion and swift communication are fast uniting East and West. And along with them have come the right Protective Papers which enable East and West to enjoy the good things of the earth, no matter where they grow!

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Kalamazoo Michigan

KVP PAPERS

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

SUMMARY

WEEK ENDING FEBRUARY 6, 1932

Cigarette paper	429 cs.
Wall paper	55 bls., 24 cs.
Paper hangings	1 bl., 1 cs.
Painted paper	1 cs.
News print	7115 rolls
Printing paper	22 rolls, 4 bls., 83 cs.
Packing paper	16 bls., 2 cs.
Drawing paper	50 cs.
Filter paper	158 bls., 16 cs.
Filter masse	170 bls.
Colored paper	48 cs.
Carbon paper	1 cs.
Metal coated paper	74 cs.
Surface coated paper	13 cs.
Baryta coated paper	54 crates. 73 cs.
Photo paper	20 cs.
Coated paper	5 cs.
Decalcomania paper	66 cs
Tissue paper	12 c.
Felt paper	11 bls.
Gummed paper	8 cs.
Wood pulp wadding	25 cs.
Bowl paper	6 bls.
Flint paper	21 cs.
Fancy paper	1 cs.
Envelopes	29 cs.
Paste board	83 cs.
Bristol boards	2 crates
Card boards	3 rolls, 7 bls., 39 cs.
Writing paper	13 cs.
Miscellaneous paper	57 cs.

CIGARETTE PAPER

P. J. Schweitzer, Pr. Harrison, Marseilles, 1 cs.
Brown & Williamson Tobacco Co., Aquitania, Southampton, 25 cs.
Liggett & Myers Tobacco Co., Lafayette, Havre, 19 cs.
Standard Products Corp., Lafayette, Havre, 26 cs.
——, Lafayette, Havre, 9 cs.
American Tobacco Co., Lafayette, Havre, 300 cs.
Champagne Paper Corp., Lafayette, Havre, 67 cs.

WALL PAPER

Irving Trust Co., Hamburg, Hamburg, 10 cs.
Globe Shipping Co., Hamburg, Hamburg, 3 cs.
F. A. Binder, Hamburg, Hamburg, 12 bls.
F. J. Emmerich, Hamburg, Hamburg, 18 bls.
F. A. Binder, Stuttgart, Bremen, 13 bls.
F. J. Emmerich, Scythia, Liverpool, 4 bls.
A. C. Dodman Jr. Inc., Scythia, Liverpool, 1 bl.
American Express Co., Takaoka Maru, Tientsin, 1 cs.
Irving Trust Co., Deutschland, Hamburg, 5 cs.
F. A. Binder, Deutschland, Hamburg, 4 cs.
F. J. Emmerich, Deutschland, Hamburg, 7 bls.
Schenker & Co., Deutschland, Hamburg, 1 cs.

PAPER HANGINGS

A. C. Dodman Jr. Inc., Scythia, Liverpool, 1 bl., 1 cs.

PAINTED PAPER

Hudson F'd'g Co., Lafayette, Havre, 1 cs.

NEWS PRINT

Perkins Goodwin & Co., Hamburg, Hamburg, 421 rolls.
W. H. Bell, Markland, Liverpool, 6143 rolls.
Jay Madden Corp., Stuttgart, Bermen, 431 rolls.
Baldwin Paper Co., Deutschland, Hamburg, 120 rolls.

PRINTING PAPER

Henschel Naeve & Co., Rotterdam, Rotterdam, 4 bls., 22 rolls.
E. Dietzgen & Co., Rotterdam, Rotterdam, 24 cs.
——, Bremen, Bremen, 12 cs.
Keuffel & Esser Co., Havre Maru, Hamburg, 11 rolls.
Japan Paper Co., Aquitania, Southampton, 2 cs.
C. Steiner, Stuttgart, Bremen, 21 cs.
E. Dietzgen & Co., Deutschland, Hamburg, 24 cs.

PACKING PAPER

E. H. Dick, Hamburg, Hamburg, 11 bls.
Wilkinson Grey & Co., Hamburg, Hamburg, 5 bls.
Hensel Bruckman & Lorbacher, Bremen, Bremen, 2 cs.

DRAWING PAPER

Keuffel & Esser Co., Havre Maru, Hamburg, 46 cs.
Winsor Newton Inc., Port Curtis, London, 3 cs.
Artists Brush & Color Corp., Amer. Farmer, London, 1 cs.

FILTER PAPER

Hensel Bruckman & Lorbacher, Havre Maru, Hamburg, 10 cs.
H. Reeve Angel & Co. Inc., Port Curtis, London, 4 cs.
J. Manheimer, Aquitania, Southampton, 158 bls., 2 cs.

FILTER MASSE

Hensel Bruckman & Lorbacher, Saco, Rotterdam, 30 bls.
A. Giese & Son, Bremen, Bremen, 40 bls.
A. Giese & Son, Havre Maru, Hamburg, 100 bls.

COLORED PAPER

W. Bersch, Hamburg, Hamburg, 1 cs.
Phoenix Shipping Co., Stuttgart, Bremen, 1 cs.
E. Dietzgen & Co., Deutschland, Hamburg, 39 cs.
F. Murray Hill Co., Deutschland, Hamburg, 7 cs.

CARBON PAPER

C. L. Voorhees, Scythia, Liverpool, 1 cs.

METAL COATED PAPER

Globe Shipping Co., Hamburg, Hamburg, 41 cs.
K. Pauli Co., Stuttgart, Bremen, 6 cs.
Phoenix Shipping Co., Deutschland, Hamburg, 3 cs.
I. J. Shore Co., Deutschland, Hamburg, 19 cs.
Taub Hummell & Schnall, Deutschland, Hamburg, 5 cs.

SURFACE COATED PAPER

Globe Shipping Co., Hamburg, Hamburg, 1 cs.
International F'd'g Co., Hamburg, Hamburg, 9 cs.
Phoenix Shipping Co., Hamburg, Hamburg, 2 cs.
Globe Shipping Co., Deutschland, Hamburg, 1 cs.

BARYTA COATED PAPER

Globe Shipping Co., Stuttgart, Bremen, 73 cs., 54 crates.

PHOTO PAPER

Defender Photo-Supply Co., Aquitania, Southampton, 20 cs.

COATED PAPER

Happel & McAvoy, Hamburg, Hamburg, 5 cs.

DECALCOMANIA PAPER

C. W. Sellers, Hamburg, Hamburg, 12 cs.
C. W. Sellers, Bremen, Bremen, 12 cs.
B. F. Drakenfeld & Co., Scythia, Liverpool, 36 cs. (duplex); 4 cs. (simplex).
Phoenix Shipping Co., Deutschland, Hamburg, 2 cs.

TISSUE PAPER

——, Hamburg, Hamburg, 7 cs.
Meadows Wye & Co., Scythia, Liverpool, 2 cs.
B. F. Drakenfeld & Co., Scythia, Liverpool, 3 cs.

FELT PAPER

Heemsoth Basse & Co., Rotterdam, Rotterdam, 11 bls.

GUMMED PAPER

Heemsoth Basse & Co., Stuttgart, Bremen, 6 cs.
E. B. Baehr & Sons, Aquitania, Southampton, 2 cs.

WOOD PULP WADDING

Bendix Paper Co., Rotterdam, Rotterdam, 25 cs.

BOWL PAPER

Hurley Johnson Corp., Scythia, Liverpool, 6 bls.

FLINT PAPER

Frey Bros., Saco, Rotterdam, 21 cs.

FANCY PAPER

Dingelstedt & Co., American Farmer, London, 1 cs.

ENVELOPES

Simfred Inc., Hamburg, Hamburg, 9 cs.
——, Bremen, Bremen, 2 cs.
J. Beckhard Co., Bremen, Bremen, 18 cs.

PASTE BOARD

——, Hamburg, Hamburg, 83 cs.

BRISTOL BOARDS

Bainbridge Kimpton & Kaupt Inc., American Farmer, London, 2 crates.

CARD BOARDS

Framerican Importing Co., Pres. Harrison, Marseilles, 8 cs.
Coty Inc., Lafayette, Havre, 22 cs.
Coy Disbrow & Co., Saco, Rotterdam, 3 cs.
Corbett & Co., Rotterdam, Rotterdam, 6 cs.
Manufacturers Trust Co., Rotterdam, Rotterdam, 3 rolls, 7 bls.

WRITING PAPER

Japan Paper Co., Rotterdam, Rotterdam, 3 cs.
H. W. Robinson & Co., Lafayette, Havre, 1 cs.
Distinctive Writing Paper Co., Lafayette, Havre, 9 cs.

MISCELLANEOUS PAPER

Saentis, Inc., Rotterdam, Rotterdam, 2 cs.
Steiner Paper Corp., Rotterdam, Rotterdam, 13 cs.
J. Beckhard, Rotterdam, Rotterdam, 14 cs.
Japan Paper Co., Rotterdam, Rotterdam, 4 cs.
Keller Dorian Paper Co., Aquitania, Southampton, 2 cs.
Guaranty Trust Co., Lafayette, Havre, 6 cs.
Shannon Joyce Co., Lafayette, Havre, 2 cs.
Globe Shipping Co., Lafayette, Havre, 1 cs.
Irving Trust Co., Lafayette, Havre, 21 cs.
W. Bersch, Deutschland, Hamburg, 1 cs.
American Express Co., Deutschland, Hamburg, 4 cs.

RAGS, BAGGINGS, ETC.

G. S. Schuster, Morro Castle, Havana, 12 bls. rags.
Marine Midland Trust Co., Rotterdam, Rotterdam, 37 bls. rags.
J. Cohen Son Co., Port Curtis, London, 25 bls. rags.
Brown Bros. Harriman & Co., Clairton, Dublin, 113 bls. paper stock.
M. Snedeker Corp., Clairton, Belfast, 283 bls. paper stock.
G. W. Millar & Co., Oriente, Havana, 10 bls. rags.
Darmstadt Scott & Courtney, Ida, Venice, 49 bls. rags.
E. J. Keller Co. Inc., Deutschland, ——, 34 bls. rags.
E. J. Keller Co. Inc., Stuttgart, ——, 47 bls. rags.

HIDE GLUE

H. Bierschenk Co. Inc., Rotterdam, Rotterdam, 200 bags.
——, Stuttgart, Bremen, 100 bags.
——, Deutschland, Hamburg, 200 bags.

OLD ROPE

Banco Com'l Italiana Trust Co., Stuttgart, Bremen, 44 coils.

CASEIN

Kalbfleisch Corp., Southern Cross, B. Ayres, 501 bags.
D. C. Andrews & Co., Deutschland, Hamburg, 60 bags.

WOOD PULP

Castle & Overton, Inc., Hamburg, Hamburg, 275 bls. wood pulp, 55 tons.
Price & Pierce, Ltd., Flora, Wallvik, 2910 bls. sulphite, 485 tons; 150 bls. sulphate, 25 tons.

(Continued on page 50)

QUALITY PULPS

"HAFSLUND BEAR"
Bleached Sulphite

"FORSHAGA"
Bleached Sulphite

"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
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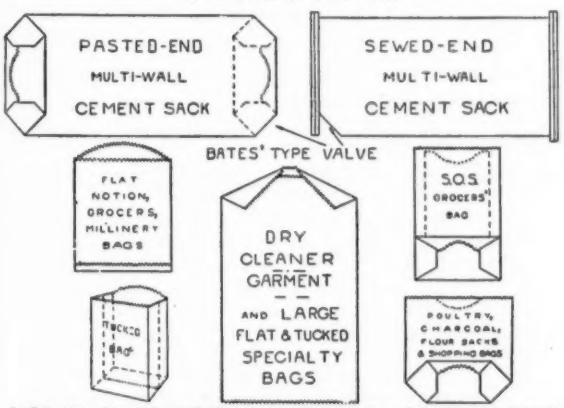
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CANTON, MASS.
Woolen manufacturers since 1856

Imports of Paper and Paper Stock

(Continued from page 48)

Stora Kopparberg Corp., Flora, Skutskar, 2875 bls. wood pulp, 603 tons.

E. M. Sergeant & Co., Flora, Hernosand, 150 bls. sulphite, 25 tons.

Price & Pierce, Ltd., Flora, Hernosand, 3900 bls. sulphite, 650 tons.

J. Anderson & Co., Flora, Hernosand, 150 bls. sulphite, 25 tons.

——, Flora, Iggesund, 2250 bls. sulphate.

Pagel Horton & Co. Inc., Flora, Gefle, 1500 bls. sulphite, 152 tons.

——, Flora, Gefle, 2000 bls. sulphite, 406 tons.

Castle & Overton, Inc., Saco, Rotterdam, 190 bls. wood pulp, 32 tons.

A. Giese & Son, Rotterdam, Rotterdam, 25 bls. wood pulp.

——, Havre Maru, Hamburg, 170 bls. wood pulp, 25 tons.

1st National Bank, Havre Maru, Hamburg, 334 bls. wood pulp, 50 tons.

Castle & Overton, Inc., Deutschland, Hamburg, 280 bls. wood pulp, 56 tons.

WOOD FLOUR

The Burnett Co., Rotterdam, Rotterdam, 400 bls., 500 bags.

State Chemical Co., Rotterdam, Rotterdam, 800 bags.

WOOD PULP BOARDS

Lagerloef Trading Co., Hamburg, Hamburg, 10 rolls, 3 tons.

BOSTON IMPORTS

WEEK ENDING FEBRUARY 6, 1932

——, Carplaka, Hernosand, 14400 bls. sulphate, 2400 tons.

Perkins Goodwin & Co., Carplaka, Norrsundet, 11000 bls. sulphate, 2200 tons.

Chase National Bank, Takaoka Maru, Yokohama, 60 bls. rags.

PHILADELPHIA IMPORTS

WEEK ENDING FEBRUARY 6, 1932

E. J. Keller Co. Inc., Exmoor, ——, 180 bls. rags.

NEW ORLEANS IMPORTS

WEEK ENDING FEBRUARY 6, 1932

Hibernia Bank & Trust Co., Ida, Venice, 50 bls. bagging.

Challenge of Unemployment

[FROM OUR REGULAR CORRESPONDENT]

GLENS FALLS, N. Y., February 8, 1932—John P. Burke, president of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, delivered an interesting address during the past week before representative business men on "The Challenge of Unemployment." A six-hour working day and a five-billion dollars bond issue by the Federal government were suggested by him as a means of remedying the unemployment situation. It is his contention that a partial solution of present conditions would result from adoption of the shorter working week while the bond issue as endorsed by Senator LaFollette could be used for work which would not result in the overcrowding of markets. He claims that six million idle men could be placed at work if the curtailed working day was established.

Mr. Burke was also one of the principal speakers at the annual get-together meeting of employees and officials of Finch, Pruyn & Co. in this city. The affair was staged in the recreation building and an elaborate program was carried out. Others who delivered addresses included Matthew Burns and Arthur Huggins, officials of the International Brotherhood of Papermakers, and George K. Walker, manager of Finch, Pruyn & Co.

Corinth Mill Gets First Safety Prize

[FROM OUR REGULAR CORRESPONDENT]

CORINTH, N. Y., February 8, 1932—The local branch of the International Paper Company has captured first prize in its division in the accident prevention contest recently concluded by Associated Industries, according to reports filed with the safety supervisor. A bronze plaque showing the record of the plant will be awarded at a celebration within the next few weeks. The company obtained a rating of 99.5 in a division of paper mills employing from 450 to 700 employees. Branches at Fort Edward, Niagara Falls and Ticonderoga also finished with good records in the contest.

A meeting of the Executives Club at the local plant was held during the week with 35 members present and officers for the year were elected. A. L. Johnson, assistant manager, was chosen president and Henry Petzold, chief engineer, was named secretary and treasurer. M. A. Jordan, general superintendent, was elected head of the entertainment committee.

Little Falls Mill Active

UTICA, N. Y., February 5, 1932—The plant of the Burrows Paper Corporation at Little Falls, N. Y., is in full operation, both machines running at top speed, a new steam power plant under construction, and a third Dilts New Type Beater just installed to care for the increasing production of their high speed operations.

President Andrew Burrows has developed several new lines of special tissues, adding to the established lines of high grade tissue for which this mill has long been famous, and the plant has enjoyed successful and uninterrupted operations throughout the past trying year.

An example of the efficiency constantly in evidence at this very wide awake mill is the present new power plant construction which, when completed, will take the place of the present plant without the loss of any operating time whatsoever.

Syracuse Foresters To Meet Paper Week

An alumni dinner will be held in New York for the graduates of the New York State College of Forestry, Syracuse, N. Y. who have taken the course in pulp and paper manufacture. The meeting has been arranged to take place during the pulp and paper convention February 15-19 according to an announcement by Professor C. E. Libby who is in charge of the pulp and paper courses at the College.

The luncheon is scheduled for the New Yorker Hotel, Wednesday, February 17 at 1:00 P.M. Warren F. Moore, '28, is acting as chairman of the committee on arrangements. Dean Hugh P. Baker of the College of Forestry will give a brief talk. Syracuse alumni who plan on attending the luncheon should send their reservations to Mr. Moore, c/o The United States Testing Company, 1415 Park avenue, Hoboken, N. J.

Diem & Wing Increases Board

CINCINNATI, Ohio, February 1, 1932—At the regular Stockholders Meeting of The Diem and Wing Paper Company, Cincinnati, Ohio, January 16th, A. Lawrence Schneider was elected to the board of directors. Mr. Schneider has been with the company fourteen years, and is now executive assistant in charge of the Sales Contact and Promotion Work.

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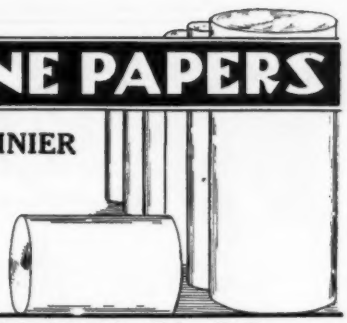

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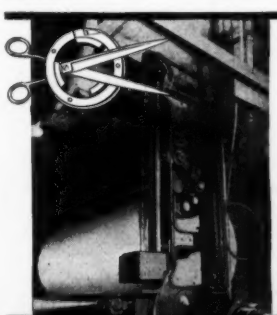

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LANGSTON SLITTERS

New York Market Review

Office of the PAPER TRADE JOURNAL.
Wednesday, February 10, 1932.

Trading in the local paper market during the past week was moderately active. Demand for the various standard grades of paper was not quite so persistent as in the preceding week. Sales forces of the leading paper organizations are still optimistic. Prices are generally well maintained.

Production of news print paper is proceeding in sufficient volume to take care of current requirements. Supplies are moving into consumption at a fairly satisfactory pace. While efforts are still being made to stabilize the industry, offerings of imported news print at very low prices, made possible through the depreciation of foreign currencies, are having an unsettling effect upon the market.

The position of the paper board market is practically unchanged. Demand for box board is seasonal. The price situation continues unsatisfactory. The fine paper market is exhibiting an irregular trend at present. Orders for kraft paper are being booked at the recently revised prices and the outlook for the future is promising.

Mechanical Pulp

Steadiness prevails in the ground wood market. Offerings are not excessive, due to curtailment of production both in North America and abroad, and the position of the industry is sound. Contract shipments are going forward in fair volume for the time of year. Prices remain unchanged, in most instances.

Chemical Pulp

While trading in the chemical pulp market is light at present, there are a number of inquiries around, some of which should materialize into good sized orders. Prices are generally steady and unchanged. Due to the recent action of the Swedish pulp manufacturers, imported unbleached sulphite continues firm.

Old Rope and Bagging

Paper mill interest in the old rope market is restricted. Demand for foreign and domestic old manila rope is slow, while small mixed rope is listless. The bagging market continues quiet, although roofing bagging is in fair request. Gunny and scrap are dull. Prices are normal.

Rags

The domestic rag market is irregular. There is little demand for cotton rags. Roofing grades, however, are in fairly persistent request and, with offerings limited, prices are firmer. The imported rag market is still affected by the uncertainty of the foreign exchange situation.

Waste Paper

Board mill demand for the lower grades of paper stock is fairly satisfactory. Strictly folded news is moving in good volume. Mixed paper is steady. The better grades of waste paper are holding their own, in most instances. Book stock and ledger stock are in fair request. Hard and soft white shavings and hard white envelope cuttings are little changed.

Twine

Most of the business transacted in the local twine market during the past week was along routine lines. Demand for the various grades is fairly active. Despite keen competition for desirable orders, prices are generally holding to previously quoted levels

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Fred A. Leahy Resigns

Fred A. Leahy, who for the past twenty years has been vice president and sales manager of the Eastern Manufacturing Company, with general offices at 230 Park Avenue, New York, has resigned. His plans have not yet been announced, but it is understood that his resignation is the result of his desire to devote his full time to other interests. Mr. Leahy's successor as sales manager is George P. Lee, who brings to his new duties a long and varied experience in both the manufacture and distribution of fine writing and printing papers, including ten years' service as a member of the Eastern sales organization. Mr. Lee has a host of friends and acquaintances in the paper trade who will welcome the news of his well-deserved promotion.

Darlington-Millspaugh Nuptials

Miss Elizabeth Millspaugh, daughter of Mr. and Mrs. William H. Millspaugh of New York and Sandusky, Ohio, was married to Thomas D. Darlington of Wilmington, Del., Tuesday, February 2 in Palm Beach, Fla. Only immediate members of the two families were present at the ceremony which took place aboard the Firelance, the yacht of the bride's parent, on which Mr. Darlington and his bride sailed on their wedding trip. They will live in Wilmington.

Miss Millspaugh was graduated from Bryn Mawr and later studied at Columbia University. Mr. Darlington was graduated from Leland Stanford University and is a member of the University Club.

New Quarters for E. G. Drew on Coast

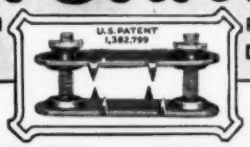
E. G. Drew, Pacific Coast manager for the J. O. Ross Engineering Corporation, John Waldron Corporation and Nichols Products Corporation announces change of address to 414 Lewis Building, Portland, Ore. Mr. Drew was previously located at 311 Lewis Building.

Receivers for Saranac Co. Appointed

PLATTSBURGH, N. Y., February 8, 1932.—Howard W. Taylor and John F. White have been appointed receivers in bankruptcy for the Saranac Pulp and Paper Company, Inc., of this place.

Tight Butt Joints

COMPRESSION PRINCIPLE



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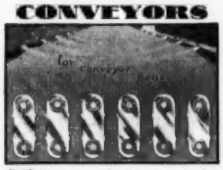

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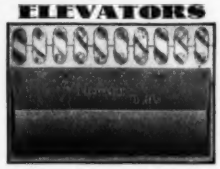

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Miscellaneous Markets

Office of the PAPER TRADE JOURNAL.
Wednesday, February 10, 1932.

BLANC FIXE.—The position of the blanc fixe market is practically unchanged. Demand is moderately active. The pulp is still quoted at from $42.50 to $45 per ton, in bulk; while the powder is selling at from 3¼ cents to 3⅜ cents per pound, in barrels, at works.

BLEACHING POWDER.—Some improvement was noticed in the bleaching powder market. The contract movement is well up to average. Prices are generally holding to schedule. Bleaching powder is selling at from $1.75 to $2 per 100 pounds, in drums, at works.

CASEIN.—Quietness reigns in the casein market. Domestic standard ground is quoted at 7½ cents and finely ground at 8 cents per pound. Argentine standard ground is selling at 8½ cents and finely ground at 9½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—The caustic soda market is exhibiting a strong undertone. Prices remain unchanged. Solid caustic soda is quoted at from $2.50 to $2.55; while the flake and the ground are selling at from $2.90 to $2.95 per 100 pounds, in large drums, at works.

CHINA CLAY.—Demand for china clay is fairly persistent. Contract shipments are moving with regularity. Prices are steady. Imported china clay is quoted at from $11 to $13 per ton; while domestic paper making clay is selling at from $7 to $11 per ton, at mine.

CHLORINE.—While the chlorine market is dull at present, contract shipments are going forward to the paper mills in fairly heavy volume. Prices remain unchanged. Chlorine is quoted at $1.75 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—No radical changes were reported in the rosin market. The grades of gum rosin used in the paper mills are quoted at from $3.55 to $3.90 per 280 pounds, in barrels, at works. Wood rosin is selling at $3.75 per 280 pounds, in barrels, on dock.

SALT CAKE.—The salt cake market continues listless. The contract movement is seasonal. Salt cake is quoted at from $15 to $16; chrome salt cake at from $12 to $13 per ton, in bulk, at works. Imported salt cake is selling at from $14 to $15 per ton, ship side.

SODA ASH.—Trading in the soda ash market is more active than of late. Inquiries are fairly numerous. Prices are steady. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1; in bags, $1.25; and in barrels, $1.38.

STARCH.—Most of the business transacted in the starch market was routine. The contract movement is normal for the time of year. Prices are unchanged. Special paper making starch is quoted at $2.54, in bags, and at $2.81, in barrels, per 100 pounds, at works.

SULPHATE OF ALUMINA.—The sulphate of alumina market is only moderately active. Prices are holding to schedule. Commercial grades are quoted at from $1.25 to $1.40; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market is fairly active. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Conditions in the talc market are fairly satisfactory. Prices are holding to previously quoted levels. Domestic talc is quoted at from $16 to $18 per ton, in bulk, at mine; while imported talc is selling at from $18 to $22 per ton, in bags, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@38.00
Bonds	5.00	@53.25
Index	6.00	@12.00
Writings—		
Extra Superfine	6.50	@15.00
Superfine	6.25	@14.75
Tub sized	4.50	@ 7.00
Engine sized	3.00	@ 5.00
Book, Cased—		
S. & S. C.	5.25	@ —
M. F.	3.75	@ 5.00
Coated and Enamel	6.25	@ 9.75
Lithograph	6.75	@11.25
Tissues—Per Ream—		
White No. 1	.65	@ .70
Anti-Tarnish M. G. only	.65	@ .70
Colored	.70	@ .90
White No. 2	.50	@ .60
Kraft	.65	@ .70
Manila	.55	@ .60
Manila—		
No. 1 Jute	9.00	@ 9.25
No. 2 Jute	7.75	@ 8.50
No. 1 Wood	4.00	@ 5.25
No. 2 Wood	3.50	@ 4.00
Butchers	3.37½	@ —
Fibre Papers—		
No. 1 Fibre	4.25	@ 5.50
No. 2 Fibre	4.00	@ 4.75
Common Bogus	1.50	@ 3.00
Screenings	2.00	@ 3.00
Card Middies	4.00	@ 5.00
Glassine—		
Bleached, basis 25 lbs., No. 1	.09¼	@ —
No. 2	.11¼	@ —
Bleached, basis 20 lbs.	.11¼	@ —

(Delivered New York)

News, per ton—		
Roll, contract	53.00	@ —
Rolls, spot	53.00	@ —
Sheets	58.00	@ —
Side Runs	38.00	@42.00
Kraft—		
No. 1 Domestic	4.75	@ 6.00
No. 2 Domestic	3.25	@ 4.00
Southern	3.25	@ 4.00
Imported	3.50	@ 4.30
Boards—per ton—		
News	24.00	@27.50
Straw	34.50	@45.00
Chip	24.00	@27.50
Binders' Boards	62.00	@70.00
Standard 85 Test Liner	32.50	@37.50
Sgl. Mla. Lil. Chip	32.50	@37.50

(F. o. b. Mill)

Wood Pulp Boards	70.00	@80.00

Mechanical Pulp

(On Dock)

No. 1 Imported—		
Moist	22.00	@24.00
Dry	22.00	@24.00

(F. o. b. Mill)

No. 1 Domestic	20.00	@28.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—		
Bleached	2.00	@ 3.00
Easy Bleaching	1.60	@ 1.75
No. 1 strong unbleached	1.50	@ 1.75
Mitscherlich unbleached	1.55	@ 1.75
No. 2 strong unbleached	1.40	@ 1.50
No. 1 Kraft	1.50	@ 1.75
No. 2 Kraft	1.40	@ 1.50
Sulphate—		
Bleached	2.35	@ 2.50

(F. o. b. Pulp Mill)

Sulphite (Domestic)—		
Bleached	2.00	@ 4.00
Easy Bleaching	1.75	@ 1.90
News	1.50	@ 1.65
Mitscherlich	2.40	@ 2.55
Kraft (Domestic)	1.60	@ 2.75

(Delivered Paper Mills)

Soda Bleached	2.50	@ —

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1	6.50	@ 7.00
New White, No. 2	5.50	@ 6.00
Silesias No. 1	5.25	@ 5.50
New Unbleached	7.00	@ 7.50
New Blue Prints	4.00	@ 4.50
New Soft Blacks	3.50	@ 4.00
Blue Overall	5.00	@ 5.25
Fancy	3.00	@ 3.50
Washables	2.75	@ 3.00
Mixed Khaki Cuttings	3.50	@ 4.00
Pink Corset Cuttings	5.00	@ 5.50
O. D. Khaki Cuttings	4.50	@ 4.75
Men's Corduroy	3.00	@ 3.50
New Mixed Blacks	3.00	@ 3.25

Old Rags

White, No. 1—		
Repacked	5.25	@ 5.75
Miscellaneous	4.25	@ 4.75
White, No. 2—		
Repacked	3.00	@ 3.50
Miscellaneous	2.30	@ 2.50
St. Soiled, White	1.50	@ 1.75
Thirds and Blues—		
Repacked	2.25	@ 2.50
Miscellaneous	1.65	@ 1.85
Black Stockings	3.25	@ 3.75
Roofing Rags—		
No. 1	.53	@ .58
No. 2	.48	@ .53
No. 3	.43	@ .48
No. 4	.38	@ .43
No. 5A	.33	@ .38

Foreign Rags

New Rags

New Dark Cuttings	1.40	@ 1.50
New Mixed Cuttings	1.60	@ 1.75
New Light Silesias	3.40	@ 3.50
Light Flannelettes	3.75	@ 4.00
Unbleached Cuttings	5.50	@ 6.00
New White Cuttings	4.75	@ 5.00
New Light Oxfords	4.00	@ 4.25
New Light Prints	2.00	@ 2.25

Old Rags

No. 1 White Linens	5.25	@ 5.50
No. 2 White Linens	4.50	@ 4.75
No. 3 White Linens	3.25	@ 3.75
No. 4 White Linens	1.75	@ 2.25
No. 1 White Cotton	4.00	@ 4.25
No. 2 White Cotton	3.00	@ 3.25
No. 3 White Cotton	2.25	@ 2.50
No. 4 White Cotton	1.40	@ 1.50
Extra Light Prints	1.90	@ 2.10
Ord. Light Prints	1.60	@ 1.75
Med. Light Prints	1.40	@ 1.55
Dutch Blue Cottons	1.35	@ 1.40
French Blue Linens	2.00	@ 2.25
German Blue Linens	2.00	@ 2.10
German Blue Cottons	1.20	@ 1.25
Checks and Blues	1.25	@ 1.30
Lindsay Garments	.75	@ .80
Dark Cottons	.70	@ .75
Old Shopperies	.55	@ .60
New Shopperies	.60	@ .65
French Blues	1.25	@ 1.30

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—		
Foreign	1.10	@ 1.20
Domestic	1.15	@ 1.25
Wool Tares, light	1.00	@ 1.05
Wool Tares, heavy	1.00	@ 1.10
Bright Bagging	1.00	@ 1.05
Small Mixed Rope	.90	@ 1.00
Manila Rope—		
Foreign	1.50	@ 1.60
Domestic	1.50	@ 1.75
New Burlap Cut	1.70	@ 1.80
Hessian Jute Threads—		
Foreign	2.60	@ 2.75
Domestic	2.80	@ 3.00

Old Waste Papers

(F. o. b. New York)

Shavings—		
Hard, white, No. 1	2.55	@ 2.75
Hard, white, No. 2	1.90	@ 2.00
White envelope cuttings	2.05	@ 2.15
Soft, white, No. 1	1.70	@ 1.80
Flat Stock—		
Stitchless	.70	@ .80
Overissue Mag.	.70	@ .80
Solid Flat Book	.60	@ .70
Crumped No. 1	.45	@ .50
Solid Book Ledger	1.75	@ 1.85
Ledger Stock	.60	@ .70
New B. B. Chips	.20	@ .30
Manilas—		
New Env. Cut	1.75	@ 1.85
New Cuttings	1.40	@ 1.50
Extra No. 1 old	1.05	@ 1.15
Print	.45	@ .50
Bogus Wrapper	.45	@ .50
Container	.25	@ .30
Old Kraft Machine—		
Compressed bales	1.00	@ 1.10
News—		
No. 1 White News	1.60	@ 1.65
Strictly Overissue	.35	@ .45
Strictly Folded	.25	@ .30
No. 1 Mixed Paper	.15	@ .20
Common Paper		Nominal

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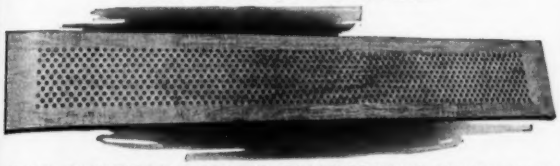

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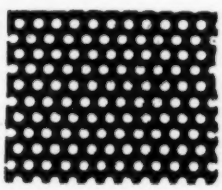

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Paper Merchants
Paper Stock and Rag Dealers
Paper Bag Manufacturers
Paper Box Manufacturers
Paper Wood Pulp and Chemical Fiber Mills of the United States, Canada, Cuba, Mexico and South America
Paper Specialties Manufacturers
Papeterie Manufacturers
Etc., etc., etc.
LOCKWOOD TRADE JOURNAL CO.
10 E. 39th Street ~ New York, N.Y., U.S.A.

Twines

(F. o. b. Mill)

Cotton—			
B. C., 18 basis	.30	@	.32
No. 1	.20	@	.22
No. 2	.19	@	.20
No. 3	.17	@	.18
A. Italian, 18 basis	.36	@	.37
Finished Jute—			
Dark, 18 basis	.18	@	.20
Light, 18 basis	.20	@	.22
Jute Wrapping, 3-6 Ply—			
No. 1	.15½	@	.16½
No. 2	.11¾	@	.12¾
Tube Rope—			
4-ply and larger	.09¾	@	.11¾
Fine Tube Rope—			
4-ply	.11	@	—
3-ply	.12	@	—
2-ply	.13	@	—
Paper Makers Twine			
Balls	.08¾	@	.10¼
Box Twine, 2-3 ply	.07	@	.08
Jute Rope	.09	@	.10
Amer. Hemp, 6	.27	@	.29
Java Sisal—			
No. 1 Basis	.10	@	—
No. 2 Basis	.09	@	—
New Zealand Sisal	.10	@	—
Sisal Lath Yarn—			
No. 1	.12	@	.14
No. 2	.10	@	.12
Manila Twine	.23	@	.28

CHICAGO

Paper

(F. o. b. Mill)

Rag Bond	.30	@	.53¼
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	05	@	.11
Superfine Writing	.18	@	.24
No. 1 Fine Writing	.14	@	.18
No. 2 Fine Writing	.12	@	.14
No. 3 Fine Writing	.07	@	.18
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¼	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	4.50	@	5.00
Southern Kraft	3.25	@	—
No. 2 Kraft	3.25	@	—
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.07	@	.07½
White Tissue	.07¼	@	.07½

(Delivered Central Territory)

News, per ton—			
Rolls, contract	53.00	@	—
Sheets	58.00	@	—
Boards, per ton—			
Plain Chip	30.00	@	35.00
Solid News	32.50	@	37.50
Manila Lined Chip	40.00	@	45.00
Container Lined—			
85 Test	50.00	@	55.00
100 Test	55.00	@	60.00

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 Hard White	1.75	@	1.85
No. 1 Soft White	1.60	@	1.65
Ledger & Writings	.70	@	.75
Solid Books	.70	@	.75
Blanks	1.30	@	1.35
Krafts	1.15	@	1.25
New Kraft Cuts	1.30	@	1.45
Manila Env. Cuts	1.60	@	1.75
Ex. No. 1 Manila	1.25	@	1.30
Print Manila	.40	@	.45
Overissue News	.40	@	.50
Old Newspapers—			
No. 1	.35	@	.45
No. 2	.30	@	.40
Mixed Papers—			
No. 1	.25	@	.30
No. 2	.25	@	.25
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper

(F. o. b. Mill)

Bonds	.04	@	.40
Ledgers	.06	@	.40
Writings—			
Superfine	.10	@	.18
Extra Fine	.15	@	.26
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Fine No. 3	.05½	@	.18
Book, M. F.	.04¾	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.06	@	.16
Coated Lithograph	.06	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.06	@	.09
Manila Sul., No. 1	.03	@	.05
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¼	@	.06
No. 2 Kraft	.03¾	@	.04¾
Southern Kraft No. 1	—	@	.04
Southern Kraft No. 2	—	@	.03¾
Common Bogus	.03	@	.04

(Delivered Philadelphia)

News Print Rolls	58.00	@	62.00
Straw Board	50.00	@	—
News Board	30.00	@	32.00
Chip Board	25.00	@	27.50
Wood Pulp Board	85.00	@	95.00
Binder Boards—			
No. 1, per ton	73.00	@	75.00
No. 2, per ton	63.00	@	65.00
Carload lots	62.00	@	67.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1.	.06	@	.06½
New White, No. 2.	.05	@	.05½
Light Silesias	.05	@	.05½
Silesias, No. 1	.06	@	.08
Black Silesias, soft.	.05	@	—
New Unbleached	.06	@	.06½
Washable, No. 1	.02½		.03
Blue Overall	.05	@	.05½
Cottons—According to grades—			
Washable, No. 2	.02	@	.02½
New Blue	.02	@	.02½
Fancy	.03	@	.03¼
New Black Soft	.03	@	.03½
New Light Seconds	.01¾	@	.02
New Dark Seconds	1.85	@	2.00
Khaki Cuttings—			
No. 1 O.D.	.04½	@	.05
No. 2 Mixed	.03½	@	.04
Corduroy	.02½	@	.03
New Canvas	.06½	@	.07
New Black Mixed	.03	@	.03½

Domestic Rags (Old)

White No. 1—			
Repacked	3.50	@	4.00
Miscellaneous	2.25	@	2.75
M. G.	4.50	@	—
Thirds and Blues—			
Miscellaneous	1.25	@	1.50
Repacked	1.75	@	2.00
Black Stockings (Export)	3.80	@	4.00
Roofing Stock—			
Foreign No. 1	1.15	@	1.25
Repacked	.80	@	.90

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.60
Domestic	1.75	@	—
Manila Rope	2.25	@	2.50
Sisal Rope	1.25	@	1.50
Mixed Rope	1.10	@	1.25
Scrap Burlaps—			
No. 1	1.50	@	1.60
No. 2	1.10	@	1.20
Wool Tares, heavy	3.00	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.50	@	2.75
New Burlap Cuttings	2.00	@	2.25

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White.	2.10	@	2.20
No. 2 Hard White.	1.75		2.10
No. 1 Soft White.	1.50	@	1.70
No. 2 Soft White.	1.40	@	1.50
No. 1 Mixed	.45	@	.55
No. 2 Mixed	.40	@	.50
Solid Ledger Stock	1.20	@	1.30
Writing Paper	.60	@	.75
No. 1 Books, heavy	.60	@	—
No. 2 Books, light	Nominal		
No. 1 New Manila	1.25	@	1.50
No. 1 Old Manila	1.00	@	1.25
Print Manila	.45	@	—
Container Manila	.35	@	.40
Old Kraft	.90	@	1.00
Common Paper	.20	@	—
No. 1 Mixed Paper	.15	@	.25
Straw Board, Chip	.25	@	.35
Binders Board, Chip	.25	@	.35
Corrugated Board	.25	@	.35
Overissue News	.40	@	.50
Old Newspaper	.30	@	.35

BOSTON

Paper

(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.05½	@	.11½
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¼	@	.06¼
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04½	@	.05½
No. 2 Kraft	.03¼	@	.03½

(F. o. b. Boston)

Southern Kraft	.03¼	@	.03½

(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)

Common Bogus	.02	@	.02¼

(Delivered New England points)

News Print, rolls	—	@	56.50
Straw Board, rolls	.009	@	52.50
Straw Board in Sheets, basis 35s to 70s	—	@	50.00
Filled News Board	27.50	@	30.00
Chip Board	—	@	25.00
Chip Board (Creasing)	27.50	@	30.00
Single Manila Lined Chip	—	@	35.00
Single White, Patent Coated News Board—			
Binder	52.50	@	60.00
Wood Pulp Board	70.00	@	75.00
Binder Boards	67.50	@	75.00

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.75	@	3.50
No. 2 Hard White	2.25	@	2.50
No. 1 Soft White	1.50	@	1.75
No. 2 Mixed	.50	@	.55
No. 1 Mixed	.75	@	.85
Solid Ledger Books	1.50	@	1.75
Overissue Ledger Stock	1.35	@	1.60
Mixed Ledgers	1.15	@	1.30
No. 1 Books, heavy	.65	@	.75
No. 1 Books, light	—	@	.45
Crumpled Stitchless Book Stock	1.00	@	1.25
Manila Env. Cuttings	1.85	@	2.00
No. 1 Old Manila	.80	@	.90
White Blank News	1 35	@	1.45
Kraft No. 1	—	@	.85
Manila	.90	@	1.00
No. 1 Mixed Paper	.15	@	.17½
Print Manila	.35	@	.40
Overissue News	.35	@	.40
Old Newspapers	.22½	@	.27½
Box Board, Chip	.17½	@	.20
Corrugated Boxes	.30	@	.32½

Bagging

(F. o. b. Boston)

Gunny No. 1—			
Foreign	—	@	1.00
Domestic	—	@	1.10
Manila Rope—			
Foreign	1.25	@	1.50
Domestic	—	@	1.50
Transmission Rope	—	@	1.00
Mixed String	.25	@	.35
Jute Rope	—	@	1.00
Jute Carpet Threads	.75	@	.90
Bleachery Burlap	—	@	2.25
Scrap Burlap	—	@	.85
No. 1 Scrap Burlap	—	@	.90
Scrap Sisal	.90	@	1.10
Scrap Sisal for shredding	—	@	1.25
Wool Tares, heavy	1.00	@	—
New Burlap Cutting	1.50	@	1.75
Australian Pouches	—	@	1.50
Heavy Baling Bagging	1.50	@	1.60
Paper Mill Bagging	.75	@	.85
Bagging No. 2	—	@	.40
No. 1 Burlap	—	@	3.50

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New White No. 1.	—	@	.05¼
New White No. 2.	—	@	.04
Silesias No. 1	.04½	@	.05
New Black Silesias	.02½	@	.02¾
New Unbleached	.05½	@	—
Fancy	—	@	.03¾
Washable	—	@	.03½
Cottons—According to grades—			
Blue Overalls	—	@	.05
New Black, soft	.04	@	.04¾
Khaki Cuttings	.03	@	.03¾
O. D. Khaki	.04½	@	.05
Corduroy	.03	@	.03¾
New Canvas	.08	@	.08½

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	4.75	@	5.25
Miscellaneous	—	@	4.00
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Twos and Blues	—	@	1.50
Thirds and Blues—			
Repacked	—	@	.85
Miscellaneous	1.00	@	1.20
Black Stockings	3.25	@	3.50
Roofing Stock—			
No. 1	.53	@	.58
No. 2	.48	@	.53
No. 3	.43	@	.48

Foreign Rags

(F. o. b. Boston)

Dark Cottons	—	@	.55
New No. 1 White Shirt Cuttings	5.00	@	5.50
Dutch Blues	—	@	1.80
New Checks & Blues	4.00	@	4.50
Old Fustians	1.55	@	1.65
Old Linsey Garments	.65	@	.70

TORONTO

Paper

(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.10¾	@	—
No. 2 Sulphite	.08½	@	—
No. 1 Colored	.11¼	@	—
No. 2 Colored	.09	@	.10¾
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
Book—			
No. 1 M. F. (Carloads)	6.65	@	—
No. 3 M. F. (Carloads)	6.20	@	—
No. 1 S. C. (carloads)	7.15	@	—
No. 3 S. C. (carloads)	6.65	@	—
No. 4 S. C. (carloads)	5.70	@	—
No. 1 Coated and Litho	12.50	@	—
No. 2 Coated and Litho	11.50	@	—
No. 3 Coated and Litho	10.00	@	11.50
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.60	@	—
White Wrap	5.10	@	—
"B" Manila	5.00	@	—
No. 1 Manila	5.60	@	—
Fiber	5.60	@	—
Kraft, M. F.	5.98	@	—
Kraft, No. 2	5.60	@	—

(Delivered Toronto)

News, per ton—			
Rolls (contract)	56.50	@	57.00
Sheets	61.50	@	—

Pulp

(F. o. b. Mill)

Ground Wood	30.00	@	32.00
Sulphite easy bleaching	50.00	@	—
Sulphite, news grade	44.00	@	—
Sulphite, bleached	62.50	@	75.00
Sulphate	60.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.85	@	—
Soft White	2.40	@	—
White Blk. News	1.50	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	—
Light and Crumpled Book Stock	.80	@	—
Ledgers and Writings	1.00	@	—
Manilas—			
New Manila Cut	1.70	@	—
Printed Manilas	.65	@	—
Kraft	1.75	@	—
News and Scrap—			
Strictly Overissue	.50	@	—
Strictly Folded	.50	@	—
No. 1 Mixed Paper	.40	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No 1 White Shirt Cuttings	.09½	@	.10
Fancy Shirt Cuttings	.06	@	.06¼